JULY 21, 1956 SEC. 8 PAGES 105 TO 154

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2
Telegrams: LANCET, RAND, LONDON Telephone: TEMPLE BAR 7228 and 7229

No. III OF VOL. II, 1956
No. 6934 VOL. CCLXXI
LONDON, SATURDAY, JULY 21, 1956
Founded 1823 PUBLISHED WEEKLY Registered as a Newspaper
Pp. 112—Price 1s. 6d.
Annual Subscription: £3 3s.

AUG 9 - 1956

"SOROSIL"
DERMAL OINTMENT
for the amelioration of itching in Pruritus, Prurigo, and other inflammatory skin conditions
H. R. NAPP LIMITED
3 & 4, CLEMENTS INN LONDON, W.C.2

CONTRACEPTION
(Birth Control) Theory, History and Practice
By MARIE C. STOPES, D.Sc., Ph.D., F.L.S., etc.
Fully detailed medical text.
8th Edition. Price 35s. Pp. 491. Illus.
Putnam & Co. Ltd., 42 Great Russell-street, W.C.1

THE LAW AND ETHICS OF DENTAL PRACTICE
By R. W. DURAND, M.R.C.S., L.R.C.P.
Formerly Secretary of the Medical Protection Society
and
D. MORGAN, L.D.S. (Leeds)
Formerly Deputy Dental Secretary of the British Dental Association
Foreword by Professor R. V. BRADLAW, M.D.S., Dunelm, F.D.S., M.R.C.S. Eng.
Professor of Oral Pathology, Durham University
Director, Newcastle-upon-Tyne Dental School
Expert guidance on the many problems which confront the dentist
Demy 8vo 98 + viii Price 7s. 6d. net, plus 4d. postage
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

HOW TO WORK—
ADVICE TO STUDENTS STARTING MEDICINE.
An address to the London Hospital Medical Society.
By A. E. CLARK-KENNEDY, M.D. Camb., F.R.C.P.
Demy 8vo. 16 pages. Price 1s.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

INTO GENERAL PRACTICE
A Guide for Beginners and Others
By J. G. THWAITES, M.B., B.S.
". . . gives sound advice about the organization of a practice and the obligations of a general practitioner under the National Health Service."—*British Medical Journal.*
232 pages 12s. 6d. net
Wm. Heinemann Medical Books Ltd., Gt. Russell-street, W.C.1

MANAGEMENT OF BURNS
Six articles prepared by a subcommittee of the BRITISH ASSOCIATION OF PLASTIC SURGEONS
Reprinted from THE LANCET *with an appendix*
These articles record the practice of surgeons who are treating burns every day and who see the good results of treatment that is carefully planned from the start. Here is their plan, fully but briefly set out.
48 pages Price 2s. 6d. (postage 4d.)
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

New Revised Edition
ENDOCRINE DISORDERS IN CHILDHOOD AND ADOLESCENCE
By H. S. LE MARQUAND, M.D., F.R.C.P., F. H. W. TOZER, M.D., M.R.C.P., and W. J. TINDALL, M.D.
Completely rewritten to conform with current trends in Endocrinology and based on the personal observation and treatment of patients during the last twenty years.
367 pages 90 photographic plates 32s. 6d. net
English Universities Press Ltd., 102, Newgate-street, E.C.1

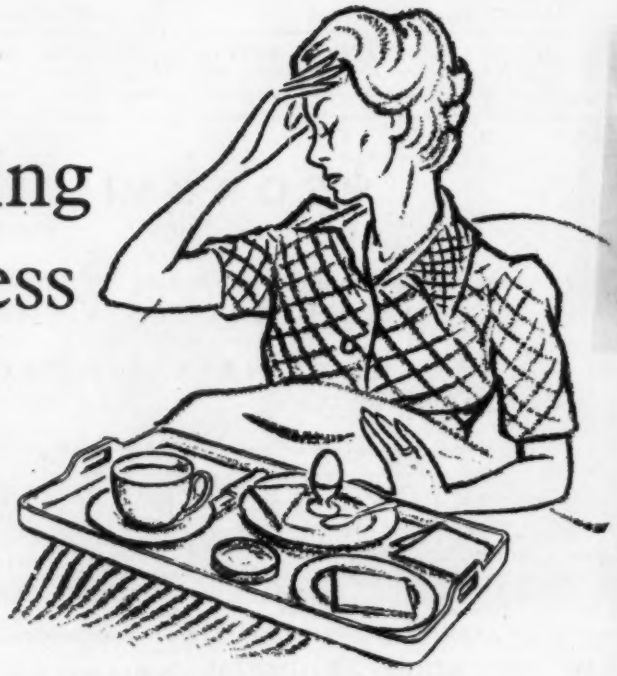
NEW BOOKS FOR ANAESTHETISTS

Now ready
TECHNIQUES AND PROCEDURES OF ANAESTHESIA
Second Edition
JOHN ADRIANI
A dozen years have elapsed since the material for the first edition of this book was assembled. During that time there have been numerous refinements and innovations in anaesthesia; the more important of these have been included in this new edition, which, it is hoped, will continue to be as useful as constant demand has proved the first to be.
584 pages 299 illustrations 66s.

Recently published
COMPLICATIONS OF REGIONAL ANAESTHESIA
DANIEL C. MOORE
This book is a comprehensive account of the complications of regional anaesthesia. The material is divided into three sections: Part I considers the complications of local infiltration and peripheral nerve blocks; Part II reviews the complications of spinal (subarachnoid) and epidural (peridural) block; and Part III discusses incidental complications. Dr. Moore is a master of his subject and will be widely read.
308 pages 97 illustrations 75s.

BLACKWELL SCIENTIFIC PUBLICATIONS · OXFORD

Stop morning sickness



'ANCOLOXIN'

TRADE MARK

TABLETS

Meclozine dihydrochloride 25 mg., plus pyridoxine hydrochloride 50 mg.

"The use of a combination of meclozine dihydrochloride and pyridoxine ('ancoloxin' tablets) in a series of cases of nausea and vomiting of pregnancy is reported. Rapid and effective control of symptoms was obtained in all cases, some of the patients having previously failed to respond to either antihistaminic treatment alone or to pyridoxine alone." (PRACTITIONER, 1956 (FEB.) 176, 201)

DOSAGE: 2 tablets at night. Complete relief is usually obtained within five days. Basic N.H.S. cost of treatment—1/4 per day. Containers of 10 and 50 tablets.

Medical Department

THE BRITISH DRUG HOUSES LTD. LONDON N.I

JULY 21, 1956 PAGES 105 TO 154

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, PATHOLOGY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6934 LONDON: SATURDAY, JULY 21, 1956 CCLXXI

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Hashimoto's Struma Lymphomatosa — R. W. LUXTON, F.R.C.P.; R. T. COOKE, M.D. 105

Primary Biliary Cirrhosis — I. W. MACPHEE, F.R.C.S. 109

The Rotherham Lead-poisoning Outbreak — ELIZABETH TRAVERS, M.B.; J. RENDLE-SHORT, M.R.C.P.; C. C. HARVEY, M.R.C.P. 113

Pathogenesis of Endocardial Fibro-elastosis — W. J. S. STILL, M.B.; E. H. BOULT, B.SC. 117

Colour-blindness in "Ovarian Agenesis" — P. E. POLANI, M.R.C.P.; M. H. LESSOF, M.R.C.P.; P. M. F. BISHOP, M.R.C.P. ... 118

Ovarian Agenesis with Male Skin Sex — Prof. ROBERT PLATT, F.R.C.P.; F. STRATTON, M.D. 120

Fat Absorption in Chronic Severe Malnutrition in Children — Prof. FEDERICO GÓMEZ, M.D.; R. R. GALVÁN, M.D.; JOAQUÍN CRAVIOTO, M.D.; SILVESTRE FRENK, M.D.; JUDITH SANTAELLA, M.D.; CARMEN DE LA PEÑA 121

PRELIMINARY COMMUNICATIONS

Acceleration of Fibrinolysis of Blood-clots by Dilution with Saline and Human Serum — J. DAUSSET, M.D.; Y. BERGEROT-BLONDEL, M.D.; M. COLIN 123

The Familial Incidence of Low Pseudocholinesterase Level — H. LEHMANN, M.D.; E. RYAN, B.SC. 124

SPECIAL ARTICLES

Outbreak of Streptococcal Infection in a Maternity Unit — J. D. A. GRAY, F.R.C.P.E. 132

Hypercalcæmia in Infants 136

The Remuneration Claim 137

LEADING ARTICLES

EXTREMITIES OF THE INTERSEX SCALE 127

THE RH BLOOD-GROUPS 128

ANNOTATIONS

Radioactive Waters 129

Chemical Treatment of Arterial Grafts 129

Intrahepatic Biliary Obstruction 130

Artificial Pneumothorax 131

Deputy C.M.O. 131

NEW INVENTIONS

"Railway" Bougies in the Treatment of Urethral Stricture — J. COSBIE ROSS, F.R.C.S. 126

THE WIDER WORLD

Public Health in Russia — Prof. C. FRASER BROCKINGTON, M.D. 138

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents ... 142

LETTERS TO THE EDITOR

Detention of the Mentally Handicapped (Dr. Duncan Leys) 143

Hypercalcæmia in Infancy (Dr. Douglas Hubble) 143

Wanted: a New Car (Dr. R. M. Mayon-White) 144

Glycyrrhetinic Acid in Dermatology (Dr. E. Colin-Jones) ... 145

Simplified Dosage (Mr. A. R. Hyett, B.SC.) 145

Fluorine, Diet, and Dental Caries (Mr. A. C. Kerr, L.D.S.; Mr. R. B. D. Stocker, L.D.S.) 145

Representative Meeting (Dr. W. D. Gray) 146

A New Clinical Entity? (Dr. A. L. Wallis) 146

Methyltestosterone (Dr. E. K. Westlake) 146

Carcinoma of Stomach and ABO Blood-groups (Dr. D. R. Haddock, Dr. R. B. McConnell) 146

Burns and Scalds (Dr. Leonard Colebrook, F.R.S.) 147

Bone and Joint Tuberculosis (Mr. I. M. Stewart, F.R.C.S.E.) 147

Parthenogenesis in Human Beings (Dr. J. W. Nicholas; Dr. S. Balfour-Lynn) 147

Piperazine Treatment of Ascaris Infestation (Dr. M. A. Rifaat, Prof. H. F. Nagaty, D.SC.) 148

The Pattern of General Practice (Dr. A. G. Richards) 148

An Outbreak of Poliomyelitis (Dr. W. Ritchie Russell; Dr. E. James) 148

Inhibition of Fibrinolysis by Alimentary Lipæmia (Dr. G. R. Fearnley) 149

The College of General Practitioners (Dr. W. N. Pickles) 149

REVIEWS

Notices of Books 125

MEDICINE AND THE LAW

Limited Liability 149

PARLIAMENT

Radiation Hazards 150

Involuntary Patients 150

Question Time 151

PUBLIC HEALTH

Examination of Water-supplies .. 151

Poliomyelitis 152

Maternity Services in Liverpool .. 152

Deaths in 1955 152

OBITUARY

Donald Page Lambert 152

NOTES AND NEWS

Nurses and Ancillaries in the Services 153

E.B.S. 153

Chartered Society of Physiotherapy 153

University of Cambridge 153

University of Birmingham 154

University of Liverpool 154

Appointments 152

Births, Marriages, and Deaths ... 152

℞

'Solupen'

'Solupen' is our new quickly-written name for crystalline penicillin G sodium salt and denotes soluble penicillin of the highest purity and potency.

Also available – 'Solupen' Buffered.

THE DISTILLERS COMPANY *(Biochemicals)* LIMITED, SPEKE, LIVERPOOL 19. TELEPHONE: HUNTS CROSS 1271

'Solupen' is a registered trade mark, the property of the manufacturers.

PPH 6.1456

Malnutrition and the skin

In malnutrition the skin is frequently affected. Thus in pellagra, which is ascribed mainly to nicotinic acid deficiency, dermatitis is one of the classical symptoms. Riboflavin deficiency is also characterized by skin lesions such as cheilosis, angular stomatitis and dermatitis of the nasolabial folds.

Marmite has been found particularly valuable in the treatment of lesions of mucocutaneous junctions due to riboflavin deficiency. Marmite provides 1.5 mg. riboflavin and 16.5 mg. nicotinic acid per ounce, as well as all the other known factors of the vitamin B complex. It is easily administered as it can be incorporated in the diet in a variety of appetising ways.

MARMITE
yeast extract

Literature on request
MARMITE LIMITED, 35 SEETHING LANE, LONDON, E.C.3
5605

SL

ESõBAN

Medicated Calamines

Of the highest quality, specially produced to the meticulous standard for therapeutic purposes, Esoban Calamine allows incorporation of individual dermatologist's specific medication into its elegant base giving maximum impregnation.

Advantages of Esoban Calamines include :

Freedom from the messiness of most skin medications, thereby ensuring their ready acceptance particularly by women patients. Esoban Medicated Calamines incorporate Ichthyol 2%, Coal Tar 2%, Iodochlorhydroxyquinoline 1%, or Benzamine Lactate 0.25%. Other individual specific therapeutic compounds may be dispensed in Esoban Calamine.

Available in 4-oz. bottles and Winchesters for Hospital use. May be freely prescribed on Form E.C.10.

Booklet on unsaturated fatty acid therapy on request

SOUTHON LABORATORIES LTD.
Upper Richmond Road, London, S.W.15. Vandyke 4347

NEW!
Smaller spray for general practitioner use
(100 ml.)

Nobecutane

The sterile plastic dressing for small cuts, abrasions and major surgical incisions

Nobecutane is suitable for dressing most wounds from small cuts, burns and abrasions to major surgical incisions. Its great tensile strength and elasticity make it useful for covering those injuries where the patient can continue at work, for it gives maximum protection with minimum limitation of movement. As it is both waterproof and dustproof, and will withstand most detergents and emulsified oils, it is an ideal industrial dressing, especially where hygiene in the preparation of food is important. As it is impermeable to bacteria, but allows normal skin respiration, the dressing ensures healing with no contamination of the wound and no maceration of the skin.

Waterproof, Dustproof
Impermeable to Bacteria
No Wound Contamination
No Skin Maceration

EVANS

EVANS MEDICAL SUPPLIES LIMITED
SPEKE, LIVERPOOL 19 (HUNTS CROSS 1881)
London Office : Ruislip, Middlesex (Ruislip 3333)
614A

Morphology of HUMAN BLOOD CELLS

By L. W. DIGGS, *Professor of Medicine and Director of Medical Laboratories, University of Tennessee.*

188 pages, 169 illustrations in colour and 79 in black and white. NEW! About **87s. 6d.**

Management of MENSTRUAL DISORDERS

By C. FREDERIC FLUHMANN, *Clinical Professor of Obstetrics and Gynæcology, Stanford University.* 350 pages, 121 illustrations. **59s. 6d.**

Solutions to a host of frustrating problems . . . from the menarche to the menopause.

DISEASES OF THE CHEST. By H. CORWIN HINSHAW, *Clinical Professor of Medicine;* and L. HENRY GARLAND, *Clinical Professor of Radiology, at Stanford University.* 727 pages, with 634 illustrations. NEW! **105s.**
". . . an excellent textbook which should take its place among the standard works."—THE LANCET.

ELECTROCARDIOGRAPHY. By LOUIS WOLFF, *Clinical Professor of Medicine, Harvard.* New (2nd) edition. 342 pages. 199 illustrations. **49s.**

THE NEUROSES IN CLINICAL PRACTICE. By HENRY P. LAUGHLIN, *Clinical Professor of Psychiatry, George Washington University.* 802 pages. **87s. 6d.**

Clinical Recognition and Management of DISTURBANCES OF BODY FLUIDS. By JOHN H. BLAND, *Professor of Medicine, University of Vermont.* New (2nd) edition. 522 pages. 109 illustrations. **80s. 6d.**

CHRISTOPHER'S TEXTBOOK OF SURGERY. By LOYAL DAVIS, *Chairman of Department of Surgery, Northwestern University.* New (6th) edition. 1,484 pages. 1,359 illustrations. **108s. 6d.**

W. B. SAUNDERS COMPANY LTD. *7, Grape Street. LONDON, W.C.2*

Progressive new therapy for ATHLETE'S FOOT, *ringworm and other fungal infections*

penotrane
TRADE MARK
PHENYLMERCURIC DINAPHTHYLMETHANE DISULPHONATE

For the treatment of fungal infections of the skin, including athlete's foot and ringworm, Penotrane has been shown in clinical practice to produce most rapid results and maximum relief. In tinea pedis particularly, the incidence of relapses which is one of the most troublesome factors, is greatly reduced (*Practitioner*, 1956, 176, 670). Penotrane solution should first be applied to the affected areas, then followed, after the solution has dried, by a liberal use of the dusting powder, especially between the toes. If continued application of the solution causes the tissues to become brittle and scaly, it should be replaced by the emollient Penotrane jelly.

SOLUTION: Bottles of 100, 500 and 2,000 c.c.
POWDER: Polythene Insufflating Containers and 25 gm. Sprinkler Tins.
JELLY: Tubes of 1 oz.

Literature and samples available on request.

A · W·B · MEDICAL PRODUCT

WARD, BLENKINSOP & CO., LTD.

YORK HOUSE, QUEEN SQUARE, LONDON, W.C.1

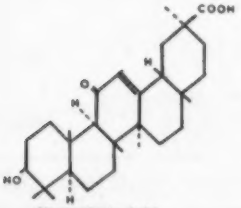
Phone: Holborn 5992/6 (5 lines) 'Grams: Duochem, Westcent, London

3

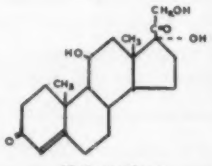
A new anti-inflammatory and anti-pruritic agent

BIOSONE G.A.

BIOSONE G.A. OINTMENTS contain 2% of the dermatologically active isomers of Glycyrrhetinic Acid which, when applied to the skin, has an action resembling that of HYDROCORTISONE (B.M.J. Dec. 1955, p. 1501).



Glycyrrhetic Acid
Glycyrrhetinic Acid



Hydrocortisone

Available in SPECIALLY FORMULATED BASES which take into account the sensitive nature of G.A.:—

BIOSONE G.A. OINTMENT (GREASY)
BIOSONE G.A. Ointment (NON-GREASY)
BIOSONE G.A Ointment with NEOMYCIN

FREELY PRESCRIBABLE ON E.C.10.

BIOSONE G.A. is INEXPENSIVE by comparison with Hydrocortisone and no systemic or local reactions have been reported.

BIOSONE G.A. OINTMENTS

The FIRST CHOICE in the treatment of DERMATOSES

Pack: 25 gm. tubes

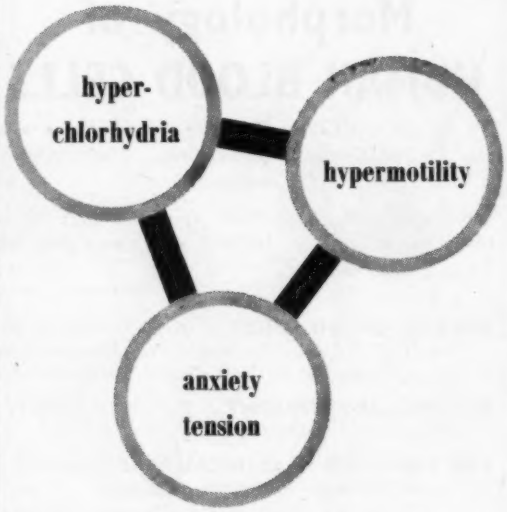
Samples and literature available on request.

Distributed by

BIOREX

(MARKETING) LTD.

Research and manufacture by BIOREX LABORATORIES LTD., 47/51 Exmouth Street (Mkt.), Rosebery Avenue, London, E.C.1.
Telephones: TERminus 9494, 5216/8



Combat the peptic ulcer triad with *Collubarb* tablets

Each active constituent in COLLUBARB has a specific function in the treatment of dyspepsia, hyperacidity and peptic ulceration, and provides effective symptomatic relief.

HYPERCHLORHYDRIA
Aluminium Hydroxide 5 gr. (320 mg.)

ANXIETY TENSION
Phenobarbitone ½ gr. (16 mg.)

HYPERMOTILITY
Atropine Sulphate 1/500 gr. (0.13 mg.)

Presentation *Cartons of 24 and 100 (film wrapped)*
Containers of 500

EVANS MEDICAL

EVANS MEDICAL SUPPLIES LTD.
SPEKE, LIVERPOOL 19 (HUNTS CROSS 1881)
London Office: Ruislip, Middlesex (Ruislip 3333)

600A

CHLORAMPHENICOL INSUFFLATION SET

For Topical use with the Armour Powder Insufflator

INDICATIONS
CHRONIC SUPPURATIVE OTITIS MEDIA
OTITIS EXTERNA
ABSCESS CAVITIES

EACH SET CONTAINS ONE INSUFFLATOR AND ONE TUBE OF 6 CAPSULES EACH 0·125 gm. CHLORAMPHENICOL.

(Designed and patented by Armour and Company British Patent No. 668341)

THE ARMOUR LABORATORIES
(Armour & Company Ltd.)
HAMPDEN PARK, EASTBOURNE, SUSSEX

Telephone : HAMPDEN PARK 740
Telegrams : 'ARMOLAB' EASTBOURNE

Essential Iron

Iron is essential for blood formation and inevitably forms the foundation in the treatment of all types of hypochromic microcytic anæmia. PLASTULES Hæmatinic Compound is a reliable source of this essential iron. The palatability of the capsules and the readiness of absorption of the contained ferrous salt renders the preparation a potent weapon in the treatment of all iron deficiency anæmias. Two or three capsules daily raise the hæmoglobin 7—10% each week until the normal blood level is attained. PLASTULES Capsules are presented in four varieties : Plain, with Liver Extract, with Hog Stomach and with Folic Acid.

PLASTULES
HÆMATINIC COMPOUND

The word 'Plastules' is a registered trade mark of Wyeth

JOHN WYETH & BROTHER LIMITED, Clifton House, Euston Road, London, N.W.1.

5

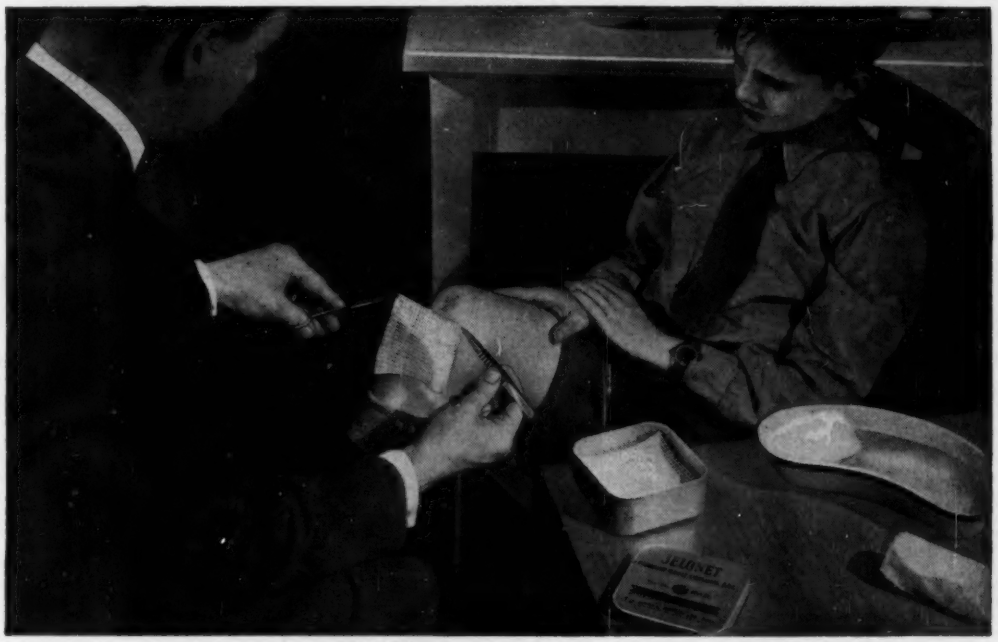
Simple, effective contraception

where secondary occlusive methods are unacceptable or impracticable

Preceptin™ VAGINAL GEL

Ortho

Ortho Pharmaceutical Limited · High Wycombe · England



Is it going to hurt?

There are many wounds of all types which require dressing in such a way that the delicate epithelium receives the minimum of trauma. Most burns and many of the lesser accidents to which children are subject come into this category.

In such cases, consider the advantages of Jelonet paraffin gauze dressing. This non-adherent dressing, a Smith & Nephew product, comes to you sterilized for immediate use in your surgery. It need exert no more pressure over the damaged part than is absolutely necessary; dressing trauma is prevented, and healing can continue undisturbed.

Jelonet dressings are supplied in tins and in separately-packed single pieces, in sealed envelopes, for use in the patient's home.

JELONET

TRADE MARK

PARAFFIN GAUZE DRESSING B.P.C

is a dressing for all wounds — sterile and ready for immediate use

Jelonet may be prescribed on Form E.C.10 in the following sizes: — individual pieces in separate envelopes, in cartons of 12, and in tins containing 5, 10 and 36 pieces. Each piece $3\frac{1}{4}$" x $3\frac{1}{4}$".
For hospitals and other large users there is a special tin containing a strip 8 yds. long x $3\frac{1}{4}$" wide zig-zag folded. Every dressing is sterilised and ready for immediate use.

FULL DETAILS FROM SMITH & NEPHEW LTD · WELWYN GARDEN CITY

S&N

ASPIRIN is still one of the most useful drugs in paediatrics. Standard 5 grain tablets are not easy to administer, and may cause dosage difficulty. Rasprin tablets have been introduced to meet the need for a safe, prescribable children's aspirin. Each Rasprin tablet gives 1½ grains of soluble calcium aspirin (equivalent to a quarter of a standard aspirin tablet), making dosage simple, even for infants.

Safe

Each 10 Rasprin tablets is packed in a plastic vial. The amount of aspirin in each container is therefore limited to a total of 12½ grains, making accidental overdose impossible. Rasprin disintegrates in the mouth so quickly that there is no possibility of choking.

Soluble

Each Rasprin tablet contains calcium carbonate, which reacts with the aspirin to produce soluble calcium aspirin; together with citric acid, to start the reaction and ensure quick disintegration.

Pleasant

Rasprin tablets have an inviting colour and a pleasant raspberry flavour which makes them very acceptable to young children.

Economical

Rasprin is distributed in special dispensing packings, and is free of Purchase Tax. The prescription price is 4d. per vial of 10 tablets.

On Prescription Only

Rasprin is not advertised to the lay public, and may be prescribed on Form E.C. 10.

for the menopausal syndrome

A NEW FAT-STORED ŒSTROGEN

TACE

may change present-day concepts of œstrogen therapy because:—

TACE is stored in body fat—its activity is gradually released in a manner closely resembling natural œstrogen secretion.

TACE is free from side effects. Nausea, vomiting and œstrogen withdrawal bleeding in the female and painful gynæcomastia in the male are not produced.

TACE has virtually no effect on the pituitary gland. Resistance does not develop on prolonged therapy—'TACE' is therefore of particular value in the treatment of prostatic carcinoma where it will often continue to control the condition when resistance to other œstrogens has developed.

INDICATIONS

1. MENOPAUSAL SYNDROME
2. INHIBITION OF LACTATION
3. PROSTATIC CARCINOMA

REFERENCES

The Storage of Estrogen in Human Fat after Estrogen Administration. Amer. J. of Obstetrics & Gynecology (1952) **63**:1361.

A Fat-Soluble Estrogen—Use in the Treatment of Menopausal Distress. Amer. J. of Obstetrics & Gynecology (1954) **3**:201.

Preliminary Experience in Treatment of the Menopause with Tace, a new Type of Estrogen. Journal of Clinical Endocrinology and Metabolism (1954) **14**:272.

Management of the Menopause. Editorial, J. Amer. med. Ass. (1955) **158**:566.

Merrell

'TACE' is available in capsules each containing 12 mg. chlorotrianisene in bottles of 60 and 300 capsules.

Detailed literature is available on request.

'TACE' brand chlorotrianisene is distributed in the United Kingdom and Eire by

RIKER LABORATORIES LTD., LOUGHBOROUGH, LEICS.

for the Wm. S. Merrell Co., London.

an all-round defence against

in all its phases

The relief of pain is rightly the patient's just insistence. Effective alleviation may be obtained in many pain producing conditions which increase seasonally. Rheumatism, lumbago, arthritis, coryzal and influenzal aches are but some of the common ailments which call for a rapid form of therapy. Hypon Tablets fulfil the requirements of a safe analgesic without any untoward side effects being experienced. Caffeine and phenolphthalein present in Hypon Tablets ensures a preparation which is the best in its category

FORMULA: *Acid Acetylsalicyl B.P. 40.22% Phenacet. B.P. 48.00% Caffein B.P. 2.00% Codein. Phosph. B.P. 0.99% Phenolphthal. B.P. 1.04% Excip. 7.75% (each tablet 8 grains)*

HYPON TABLETS

Prescribe Hypon Tablets by name

CALMIC LIMITED, CREWE. *Phone CREWE 3251-5* **LONDON:** *2 Mansfield St., W.1. Phone LANgham 8038-9*

AUSTRALIA: 458-468 Wattle Street, Ultimo, Sydney, N.S.W. **CANADA:** Terminal Buildings, York St., Toronto.

H2

Prevention of Motion Sickness

6

The Incidence of Motion Sickness in Young Children

YOUNG CHILDREN are particularly subject to the distress of motion sickness. They appear to be even more susceptible than adults to car and bus sickness.

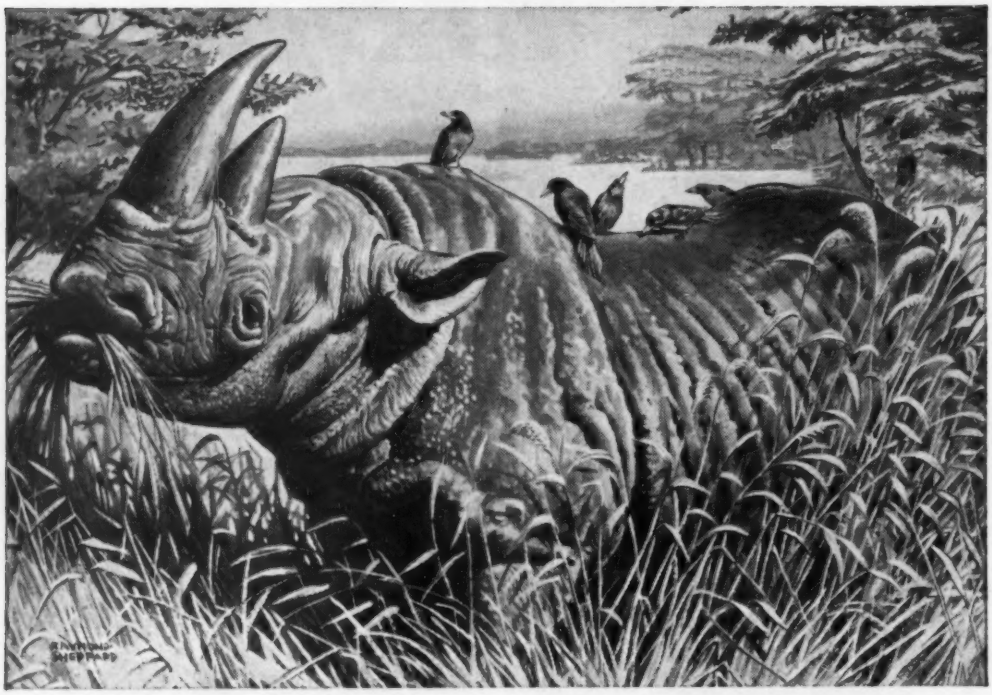
Fortunately, a most effective preventive of motion sickness—hyoscine hydrobromide — has a very low toxicity, in the small doses which are necessary, and is safe for use with young children.

A reliable brand of hyoscine is available, without prescription, through all pharmacists as Kwells.

Each Kwells tablet contains 0.3 mg hyoscine hydrobromide. One tablet is an effective dose for the average adult; but bad subjects may need — and could well tolerate — a dose of two tablets. For children down to seven years, one-half the adult dose is suitable; and for young children down to about three years, one-quarter of a tablet.

Kwells are sold at 1/6d for a vial of 10 tablets. They are advertised to the lay public. The manufacturers—Messrs. E. Griffiths Hughes Ltd., P.O. Box 407, Manchester—will be pleased to send a professional sample upon request.

An unusual degree of tolerance...



WELL tolerated by patients undergoing long-term aspirin therapy in rheumatic conditions; easily taken by those who are nauseated by crushed or dissolved aspirin, or who cannot swallow tablets, Paynocil presents aspirin in its most acceptable form.

Gastroscopic investigation has shown Paynocil to be superior to aspirin tablets in causing less inflammation of the gastric mucosa, a constant risk with prolonged treatment. Paynocil tablets are equally suitable for occasional analgesia.

They disintegrate pleasantly and rapidly on the tongue without water.

REFERENCES

Practitioner, 173: 46, 1954: Brit. med. J., 2: 7, 1955.
Ibid., Editorial 2: 31, 1955.

THE OX-PECKER, *more commonly known as the Tick-Bird, is a native of Africa and is closely related to the Starling. Tick-Birds attend large game animals, moving about their backs in search of ticks—a service which would seem to merit thanks rather than mere tolerance. It is said they render a further service by making a hissing noise as a warning to their hosts at the approach of danger.*

Each tablet contains

Acetylsalicylic acid ..... 10 grains
Aminoacetic acid ..... 5 grains

PRESENTATION

Tubes of 18

Dispensing pack of 240
(Basic N.H.S. cost)..... 21/8d.

PAYNOCIL

NON-IRRITANT, PALATABLE ASPIRIN

C. L. BENCARD LTD.
PARK ROYAL · LONDON · N.W.10

Telephone: ELGar 6681
Telegrams: Bencarlond, Harles, London.

1633

"Good phyſicke againſt melancholy"

Sene....becommeth good phyſicke againſt melancholy, clenſeth the braine and purgeth it, as alſo the heart, liuer, milt, and lungs, cauſeth a man to looke yong, ingendreth mirth, and taketh away ſorrow: it cleareth the ſight, ſtrengthneth hearing, and is very good againſt old feuers and diſeaſes ariſing of melancholy.

The Herball, John Gerard, 1633, p1297

1955

"A cure in the true sense of the word"

"The substances which stimulate peristalsis are produced in the colon itself by the action of B. coli enzymes on the senna glycosides, and the stimulating action is a neuromuscular one. . . . This reproduction of the physiological process of normal defaecation is of considerable clinical importance in giving to senna a re-educative action in cases of chronic constipation, so constituting a cure in the true sense of the word. Senokot provides a constant laxative action . . . it is the pleasantest and most reliable form of senna."

Extract from THE BRITISH ENCYCLOPAEDIA OF MEDICAL PRACTICE, 1955, p. 79.

℞ Senokot STANDARDIZED SENNA

Granules: 1-2 teaspoonfuls. Tablets: 2-4

GRANULES: 2 oz., 6 oz. and 2 lb. **TABLETS:** 50, 200 and 1,000.

Prescribed under the N.H.S.: no B.P. equivalent; inexpensive; not advertised to the public.

WESTMINSTER LABORATORIES LTD., CHALCOT ROAD, LONDON, N.W.1

13

INTRAVENOUS TUBERCULOTHERAPY

Intravenous sodium PAS infusion for miliary, meningitic and severe forms of tuberculosis is an established technique; some sanatoria now favour I.V. PAS as *first choice* even in moderate cases because of its very high tolerability.

I.V. infusions demand the use of crystalline sodium PAS of first-grade quality, for which purpose 'AMINACYL' (Wander) brand of specially purified crystalline PAS is supplied to sanatoria in bottles of 250 grammes.

The Wander range of tuberculostatics also includes the following oral forms:

B-PAS WANDER

Calcium B-PAS (Wander), first introduced by our Research Laboratories in 1948, provides the advantages of high bacteriostatic levels, and excellent acceptability because it is practically tasteless.

PACKS:—Powder: Tins of 150 and 500 × 3·5 g. envelopes
Cachets: Tins of 80 and 400 × 1·0 g.

'B-PASINAH' WANDER

For concurrent therapy, 'B-PASINAH' provides 1 g. B-PAS and 25 mg. INAH in convenient Cachet form, packed in tins of 100 and 500.

Full Literature, also details of institutional quantities and prices sent on request.

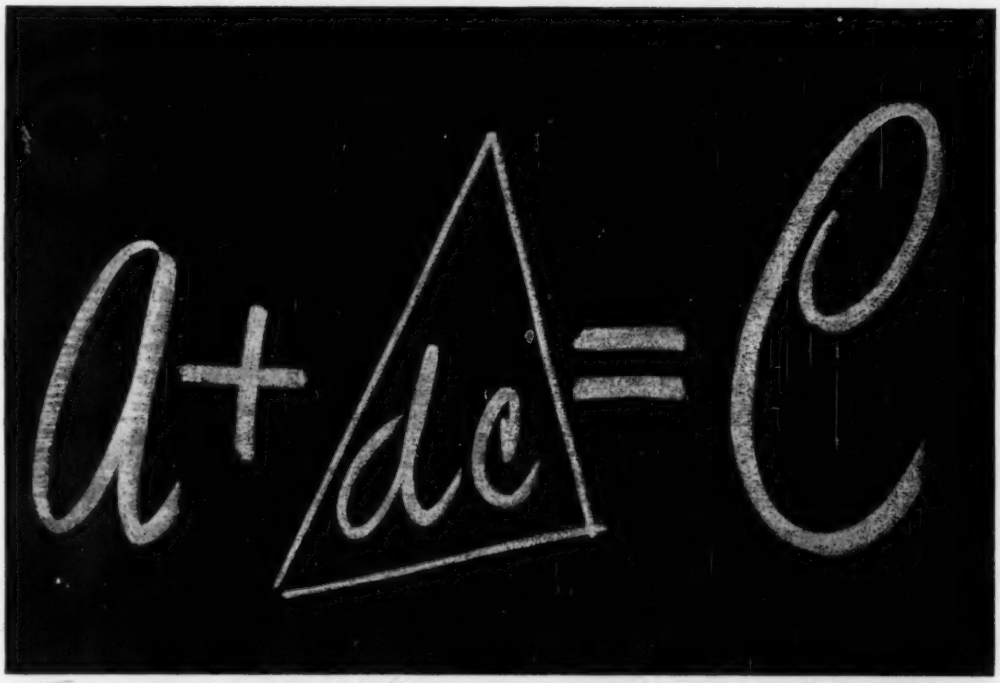
All Wander tuberculostatic products may be obtained from usual pharmacists or direct from

A. WANDER LIMITED

42 Upper Grosvenor Street, Grosvenor Square, London W.1.

CANADA: A. Wander Ltd., Peterborough, Ontario. **AUSTRALIA**: A. Wander Ltd., Devonport, Tasmania. **NEW ZEALAND**: A. Wander Ltd., Christchurch. **INDIA**: Khatau Valabhdas & Co., Indian Globe Chambers, Fort Street, Fort, Bombay, 1. **PAKISTAN**: Grahams Trading Co. (Pakistan) Ltd., P.O. Box 30, Karachi. **CEYLON**: A. Baur & Co. Ltd., Colombo.

M. 397



for

additive anti-inflammatory effects

decreased side-effects

In rheumatic disease Aspirin + Delta-Cortef* (PREDNISOLONE) = **Cordex**

Cordex combines Delta-Cortef and acetylsalicylic acid to provide the additive *anti-inflammatory* activity of each drug, plus the *analgesic* action of the salicylate. With this combination relief of pain is normally afforded in 24 to 72 hours. In the amount employed, Cordex achieves an effect equal to that produced by 2 or more times the amount of adrenal steroid alone. This combination permits a reduction in the dosage of each component, which results in a decrease in undesired side reactions.

Indicated in: fibrositis, tendinitis, synovitis, myositis, bursitis, neuritis, lumbago, painful shoulder, non-articular rheumatism, allergic arthritis, osteoarthritis and mild or low-grade rheumatoid arthritis.

Each CORDEX tablet contains :

Delta-1-hydrocortisone (Prednisolone) .....0.5 mg.

Acetylsalicylic acid .....300.0 mg.

Average dosage 1-2 tablets four times a day.

Bottles of 100 tablets.

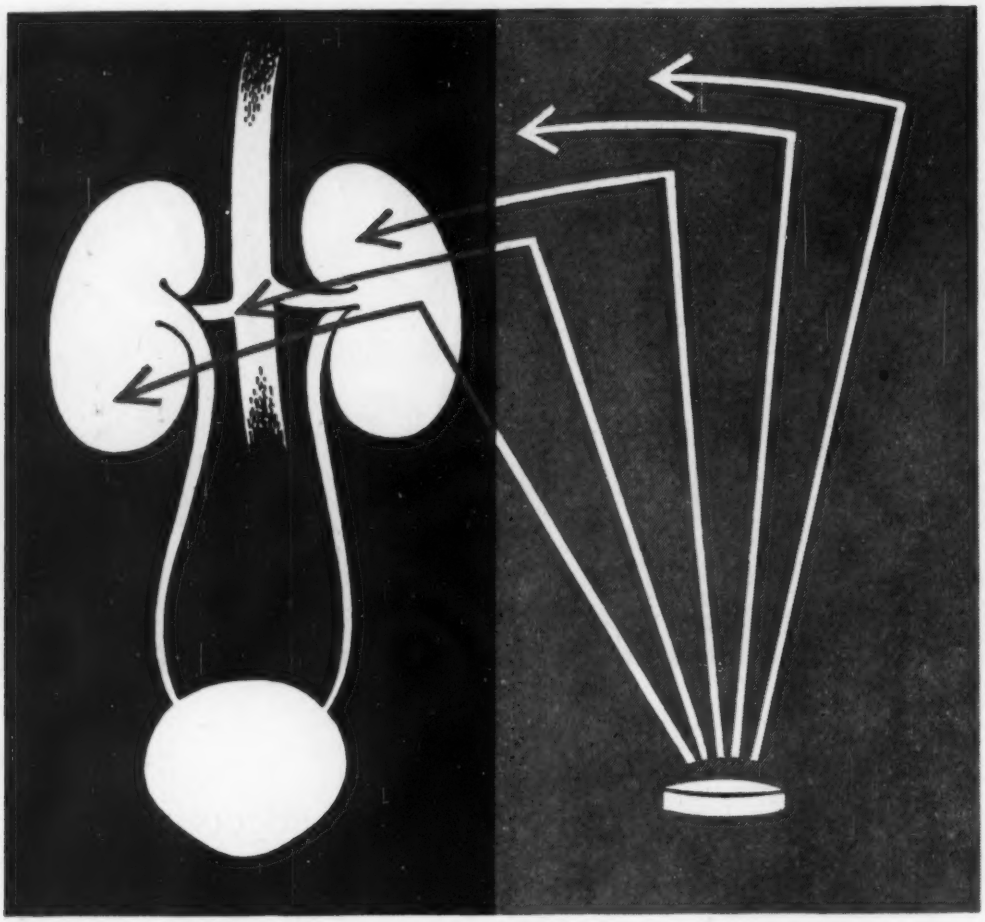
***CORDEX** is at present available to hospitals only.* *Trade mark

Upjohn

UPJOHN OF ENGLAND LTD.

4 Aldford Street, London, W.1.

15



Quickly into action

The high solubility and low acetylation of Urolucosil mean that it is rapidly excreted into the urinary tract without risk of crystalluria. As a result, high urine concentrations can be quickly attained.

That is why Urolucosil is so effective against B. coli infections of the urinary tract. Small doses are highly effective, and side-effects are rare. The maintenance dose of Urolucosil can be continued for many months without risk of toxic reactions.

Active Principle :
Sulphamethizole 0.1G.

Dose :
1 tablet 4-hourly.

Packing :
In bottles of 25, 250 and 1,000 tablets.

WARNER

UROLUCOSIL

WILLIAM R. WARNER & CO. LTD., POWER ROAD, LONDON, W.4.

LOCAL ANAESTHESIA

INFILTRATION ANAESTHESIA demands a satisfactory spread of anaesthetic solution. It is especially valuable in the outpatient department in cases where general anaesthesia is contra-indicated.

A CLEAR CASE FOR HYALASE, the enzyme hyaluronidase.

HYALASE greatly enhances the spread and absorption of the anaesthetic. It can be easily combined with the local anaesthetic with or without adrenaline, producing a greater area of anaesthesia of satisfactory duration.

HYALASE can be successfully applied whenever infiltration anaesthesia is the method of choice.

FULLY-DESCRIPTIVE LITERATURE is available and a Technical Information Service is always at your disposal.

A clear case for HYALASE TRADE MARK

BENGER LABORATORIES LIMITED · HOLMES CHAPEL · CHESHIRE

A BENGER PRODUCT

H.9. (REV)

reducing the risk of reducing...

PRELUDIN

brand of 2 - phenyl - 3 - methyl - tetrahydro - 1, 4 - oxazine - hydrochloride

PRELUDIN — the appetite controlling agent that does not raise the blood pressure

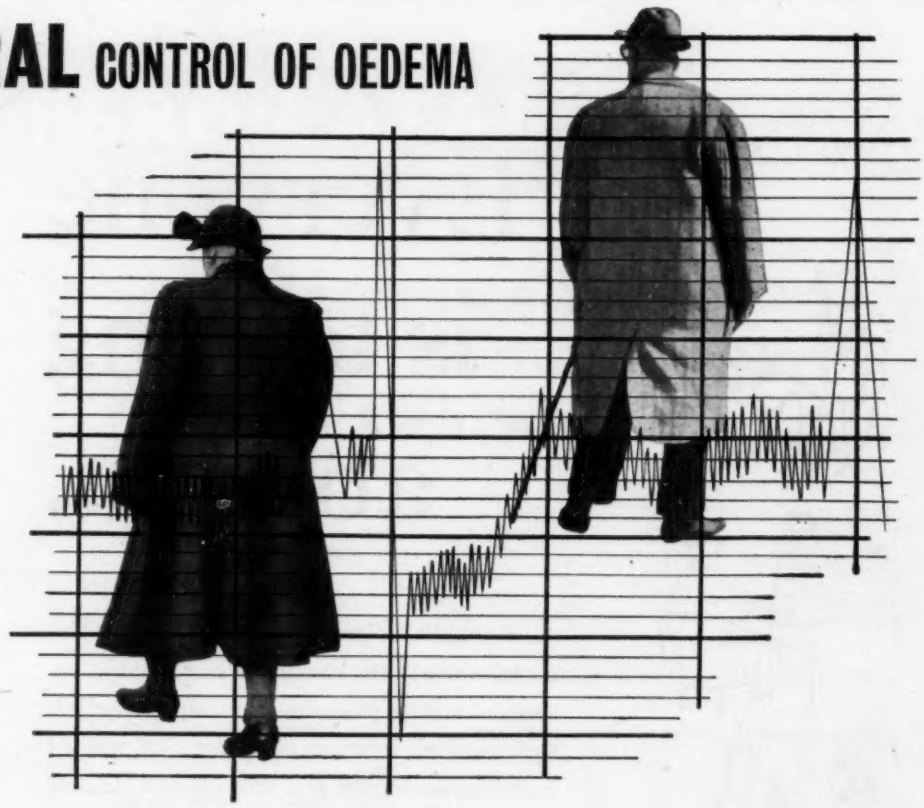
PRELUDIN, because it has no significant effect on the circulatory system,[1] is the safest possible appetite-reducing treatment for *all* obese patients—particularly those with cardiovascular disorders or hypertension. Here, for the first time, is a powerful appetite-controlling agent that curbs the appetite, breaks the psychogenic overeating habit, and controls food intake without serious side effects. It enables the patient to lose weight safely and without mental strain by strengthening adherence to a prescribed diet. PRELUDIN does *not* create excessive mental stimulation. It is the prescription of choice in all cases of obesity—especially those with cardiovascular disorders—because it reduces the risk of reducing.

Preludin—the safe prescription for obesity

Manufactured and distributed in England by Pfizer Ltd., Folkestone, Kent, for
C. H. Boehringer Sohn, Ingelheim am Rhein
Registered proprietors of the trade mark.

* *Regd. Trade Mark*

ORAL CONTROL OF OEDEMA



Oedema in cardiac patients can now be successfully controlled by Mercloran, a mercurial diuretic which is effective when given orally. Two to three Mercloran Emplets daily maintain a smooth oedema-free state and eliminate the see-saw effect of preparations given intermittently. Mercloran in most cases completely eliminates the need for injection. However, in the acute case where it is deemed necessary to initiate treatment parenterally, the chemically related compound, Mercardan, is available.

MERCLORAN

(CHLORMERODRIN N.N.R.)

EMPLETS: (enteric coated tablets)
In bottles of 25 and 250

AND MERCARDAN FOR PARENTERAL USE

PARKE, DAVIS & Company, Limited *(Inc. U.S.A.)* **Hounslow, Middlesex · Tel. Hounslow 2361**

571

19

Everyone is talking about...

... PANADOL—the new Bayer analgesic which contains no aspirin, phenacetin or codeine. Panadol relieves pain without causing side-effects such as gastric irritation or constipation, and is fast becoming established as a safe, effective analgesic for headaches, rheumatic and arthritic pain, colds and 'flu. *Panadol is not a scheduled poison, and may be prescribed on form E.C.*10.

PANADOL

Trade Mark

Tablets, 0.5*g*. *N-acetyl-p-aminophenol*, *in bottles of* 100 *and* 500.

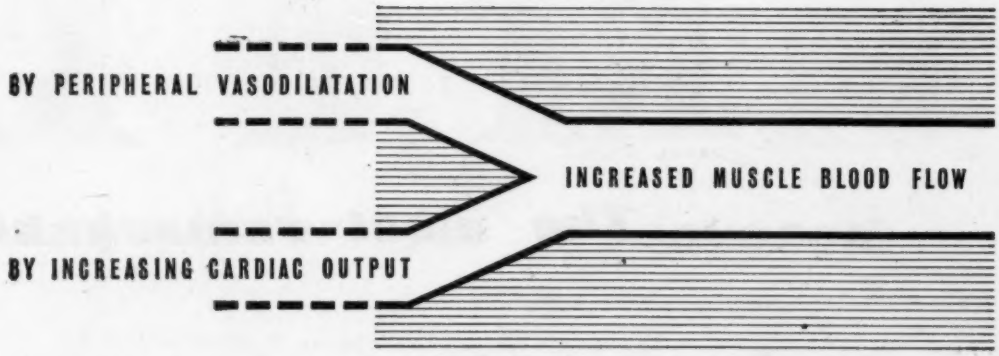
BAYER PRODUCTS LIMITED

Neville House, Kingston-on-Thames, Surrey

Export enquiries to: WINTHROP PRODUCTS LTD.

PERDILATAL*
TRADE MARK

increases muscle and skin blood flow in two ways



PERDILATAL has a two-fold action. It causes a dilatation of peripheral blood vessels, ensuring a preferential increase in muscle blood supply. At the same time the cardiac minute volume is increased; systolic pressure is maintained, diastolic pressure falls; mean arterial pressure is kept constant. This combination of vasodilatation and increased cardiac minute volume results in a considerable increase in muscle blood flow and a slight increase in cutaneous blood flow.

Indications : peripheral vascular disorders : intermittent claudication, arteriosclerosis; hypertension, rheumatic conditions.

Toxicity : low.

Dosage : Oral : 1 to 2 tablets, 4 to 6 times daily.
Parenteral : 1 to 3 ampoules daily may be administered.

Availability : tablets (2½ mg.) in containers of 100 and 500 ; ampoules (5 mg. in 1 ml.) in boxes of 12.

PERDILATAL was formerly known as DILATAL. *Full details from*

an S&N product

SMITH & NEPHEW LTD
WELWYN GARDEN CITY · HERTS

* 1-(p-hydroxyphenyl)-2-(l'methyl-3'-phenyl-propylamino)-propanol-(1) hydrochloride.

MIL

*TRADE MARK

The most remarkable tr

Now made available in Great Britain by Lederle

Fully active by mouth . . . relieves stress . . . stabilises the emotions

Valuable daytime tranquillizer . . . induces natural sleep at night

Reduces tension, irritability and restlessness

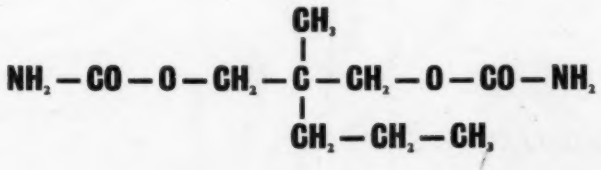
Has proved effective where barbiturates have failed

Muscle relaxant in spasm, pain and stiffness

Has no specific action on blood pressure

Free from toxicity . . . of negligible side effects

LEDERLE LABORATORIES DIVISION



2-methyl-2-n-propyl-1, 3-propanediol dicarbamate

TOWN*

MEPROBAMATE

...tranquillizer yet discovered

Selective action in anxiety and tension states

Following published reports on its successful trials, MILTOWN has been adopted by doctors in America on as large a scale as any drug in recent years. Its initial reception by British doctors indicates that its adoption in Great Britain will be no less widespread. MILTOWN owes its outstanding merits to its advantages over other conventional sedatives in restoring tranquillity in tension states, anxiety, stress and allied conditions. It shows significant absence of toxicity and almost complete freedom from side effects. It has proved effective where other tranquillizers have failed. MILTOWN is well tolerated.

DOSAGE

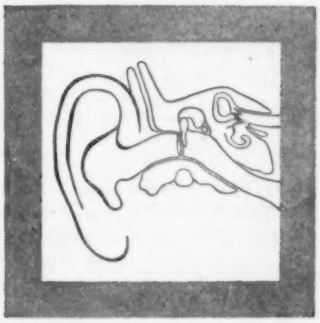
SEDATION: 1 tablet t.i.d.
HYPNOSIS: 2 tablets, 1 hour before retiring
RELIEF OF MUSCLE SPASM: 1-2 tablets 3 or 4 times daily

Tablets of 400 mg. for oral use. Bottles of 50.

Cyanamid PRODUCTS LTD. LONDON, W.C.2

simpler, swifter, surer
treatment for ear infection

CHLOROMYCETIN* Ear Drops greatly reduce the time and effort necessary to treat suppurative otitis media, chronic otorrhoea, and infections of fenestration and mastoid operation cavities. Treatment can be conveniently carried out, if necessary in the patient's home, and is effective in a matter of days as compared with previous techniques requiring long and tedious application under close supervision.



CHLOROMYCETIN *Trade Mark

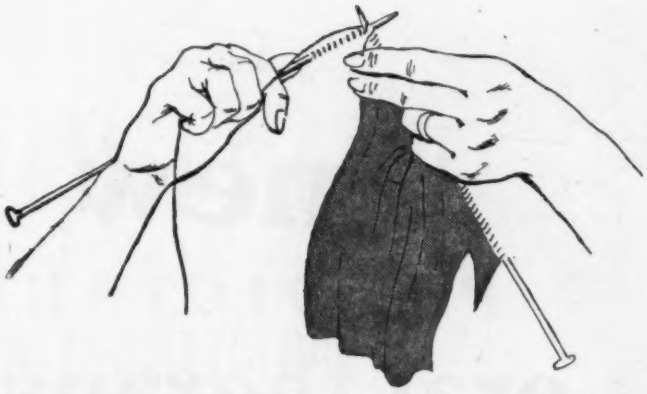
EAR DROPS 10%

(Chloromycetin 10% in propylene glycol) in 5 c.c. vials, with dropper, & bottles of 100 c.c.

Parke, Davis
& Company Limited (Inc. U.S.A.)
HOUNSLOW, MIDDLESEX
Telephone Hounslow 2361

382

ANTE-NATAL



POST-NATAL

VITEPRON

capsules containing readily assimilable iron and the natural Vitamins of the B complex give all the additional haematic factors necessary during pregnancy and lactation to maintain maximum well being for mother and child.

Literature and samples on request

PAINES & BYRNE LTD., Greenford, Middlesex

IMPORTANT NEWS!

new

PREDICTABLE

oral therapy for hypertension

'INVERSINE' is a new and distinctive autonomic ganglionic blocking agent. It is a secondary amine, *not* a quaternary ammonium compound, and is 90 times more active than hexamethonium. When given orally absorption approaches 100%

ADVANTAGES: Reproducible clinical response · Small dosage · Minimal fluctuation of blood pressure · Gradual onset and long duration of action · Effective in cases resistant to hexamethonium

'Inversine'

ORAL TABLETS

(Mecamylamine Hydrochloride)

Oral convenience with parenteral reliability

Literature and professional package gladly sent on request

MERCK SHARP & DOHME LIMITED, HODDESDON, HERTS

'INVERSINE' *(Mecamylamine Hydrochloride) 10 mg. quarter-scored tablets are supplied in bottles of 100*

'Inversine' is a Regd. Trade Mark

RAUWILOID

BRAND ALKALOID HYDROCHLORIDES
OF RAUWOLFIA SERPENTINA

IN DERMATOLOGY

A new concept of therapy for psoriasis and other intractable skin disorders. According to recent reports [1, 2, 3, 4, 5] extremely encouraging results have been obtained from Rauwolfia therapy in psoriasis, and 'Rauwiloid' is well worthy of a trial.

'RAUWILOID' is the most satisfactory form of Rauwolfia. It consists of a standardised fraction containing the desirable alkaloids of the root, and is available as 2 mg. tablets in bottles of 60 and 500.

1. *Mod. Med.* **(1954) 22: 22.**
2. *Canad. med. Ass. J.* **(1955) 72: 490.**
3. *Brit. med. J.* **(1955) 2: 381.**
4. *Union med. Canada* **(1955) 84: 672.**
5. *Arch. Derm. Syph.* **(1954) 70: 713.**

RIKER

'RAUWILOID' is a registered trade-mark
Regd. users,

RIKER LABORATORIES LIMITED
LOUGHBOROUGH LEICS

Ritalin

(phenyl-(α-piperidyl)-acetic acid methyl ester hydrochloride)

ANTIDEPRESSIVE AND MILD STIMULANT

for

GENERAL DEBILITY

MENTAL AND PHYSICAL FATIGUE

POST INFLUENZAL DEPRESSION

CONVALESCENCE

Does not impair appetite nor produce agitation

Available in tablets of 10 mg. in bottles of 25, 100 and 500

C I B A

'Ritalin' is a registered trade mark. Reg. user:

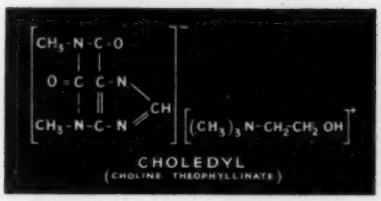
CIBA LABORATORIES LIMITED, HORSHAM, SUSSEX.

Telephone: Horsham 4321 : Telegrams: Cibalabs, Horsham

3/6

★CHOLEDYL

A major advance in ORAL xanthine therapy



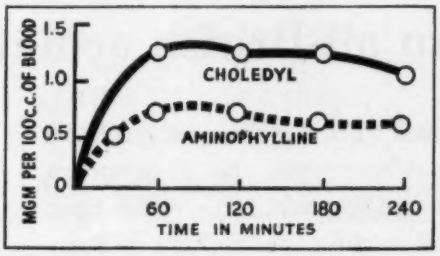
What is Choledyl?

Choledyl (choline theophyllinate), is a completely new approach to oral theophylline therapy. It is a stable, true, chemical compound. Choledyl is clinically superior to oral aminophylline and provides a predictable therapeutic response.

The main advantages of Choledyl therapy

- **STABLE**
- **FIVE TIMES MORE SOLUBLE THAN AMINOPHYLLINE**
- **RELATIVELY FREE FROM SIDE-EFFECTS**
- **HIGH THEOPHYLLINE BLOOD LEVELS**
- **AVOIDS TENDENCY TO DEVELOP DRUG TOLERANCE**

COMPARISON OF THEOPHYLLINE BLOOD LEVELS FOLLOWING A SINGLE ORAL DOSE OF 800 mg. CHOLEDYL AND FOLLOWING A SINGLE ORAL DOSE OF 800 mg. AMINOPHYLLINE.



PRESENTATION

Choledyl is available in tablet form in two strengths each tablet containing Choline Theophyllinate,

100 mg. (coloured pink) or **200** mg. (coloured yellow)
Supplied in bottles of 100 and 500 tablets

● Literature and Sample on application

MANUFACTURED IN ENGLAND

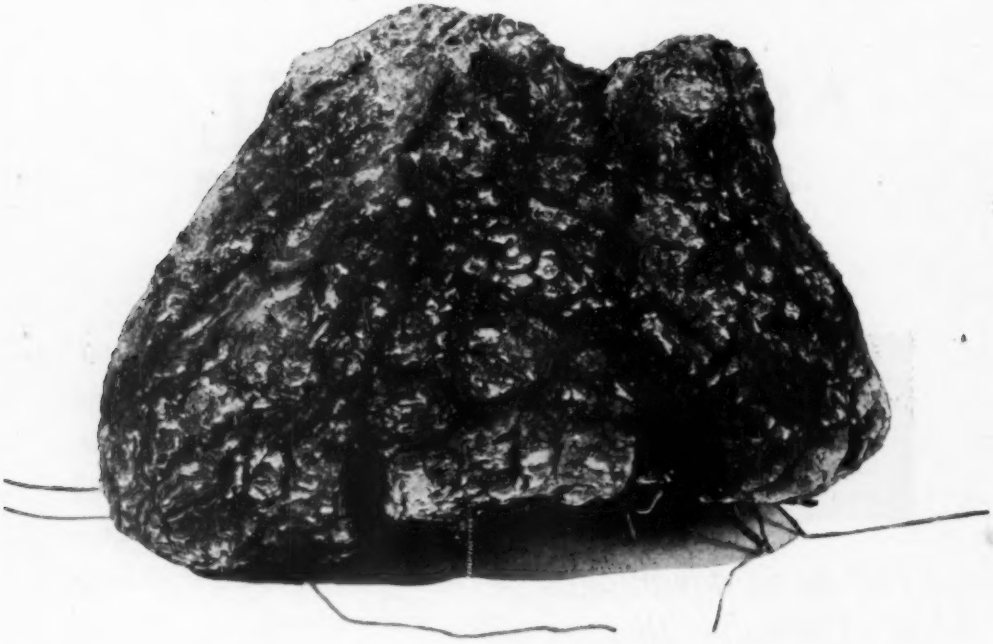
**under licence from* NEPERA CHEMICAL CO. INC. NEW YORK, *owners of the trade mark and United Kingdom patent No. 736,443*

C56/343/4

ALLEN & HANBURYS LTD · LONDON · E·2

TELEPHONE: BISHOPSGATE 8201 (20 LINES). TELEGRAMS: "GREENBURYS, BETH, LONDON"

From Elephant's Foot ...



...to CORTISONE

an all-British achievement by BOOTS

"Elephant's Foot" is the name given to a South African root, the all-important source of Diosgenin. This is the basic material used for the synthesis of Boots Cortisone and its derivatives.

Thanks to this oddly-named root, Boots are assured of a plentiful supply of the raw material for an all-British Cortisone from non-dollar sources.

BOOTS CORTICOID PREPARATIONS

CORTISTAB
(*Cortisone Acetate*)
TABLETS · INJECTION · EYE DROPS · EYE OINTMENT

HYDROCORTISTAB
(*Hydrocortisone*)
TABLETS · INJECTION (Local) · INJECTION (Intravenous)
SKIN OINTMENT · EYE OINTMENT · EYE DROPS

DELTA-STAB
(*Prednisolone*)
(*delta-1-Hydrocortisone*)
TABLETS

Delta-Stab Tablets are at present available through N.H.S. Hospitals only by arrangement with the Ministry of Health.

Boots *all-British* CORTISONE PREPARATIONS

BOOTS PURE DRUG COMPANY LIMITED · NOTTINGHAM · ENGLAND

Antihistamines for old and young

When the contents of Pandora's Box were released, Hope alone remained. To the patient of allergic diathesis, threatened by a veritable Pandora's Box of ills, the antihistamines 'Histantin' and 'Actidil' represent far more than hope.

For adults 'Histantin' is the product of choice, giving prolonged relief with a minimum of side-effects.

The new quick-acting antihistamine, 'Actidil', exerts its effect for about 12 hours and is also notable for low incidence of side-effects. 'Actidil' Elixir has been specially formulated and clinically tried for the treatment of allergic conditions in children.

'HISTANTIN', *50 mgm., is issued in bottles of 25, 100 and 500 at list prices (subject to usual discount) of 6/6, 24/6, 110/-.*

'ACTIDIL' *compressed products of 2·5 mgm. in bottles of 25 and 500 at list prices (subject) of 6/6 and 110/-.*

'ACTIDIL' ELIXIR *in bottles of 20 fluid ounces, for dispensing, at a list price (subject) of 15/-.*

BURROUGHS WELLCOME & CO. *(The Wellcome Foundation Ltd.)* **LONDON**

Pleasant . . . effective Ef-Cortelan Nasal Spray offers a very easy method of applying hydrocortisone to the nasal mucosa. This new product of Glaxo's is a valuable and inexpensive adjunct to the treatment of hay-fever, vaso-motor rhinitis and other inflammatory allergic conditions of the nose that are common in the summer months.

Glaxo EF-CORTELAN NASAL Spray

TRADE MARK

Hydrocortisone alcohol 0.02% Naphazoline nitrate 0.025% In 15 cc. transparent spray bottles

GLAXO LABORATORIES LTD • GREENFORD MIDDLESEX BYRON 3434

HASHIMOTO'S STRUMA LYMPHOMATOSA

DIAGNOSTIC VALUE AND SIGNIFICANCE OF SERUM-FLOCCULATION REACTIONS

REGINALD W. LUXTON
M.D., B.Sc. Manc., F.R.C.P.

CONSULTANT PHYSICIAN, CRUMPSALL HOSPITAL AND THE CHRISTIE HOSPITAL AND HOLT RADIUM INSTITUTE, MANCHESTER

R. T. COOKE
M.D. Edin.

PATHOLOGIST, HARTLEPOOLS HOSPITAL SERVICES JOINT COMMITTEE, CO. DURHAM

IT is over forty years since Hashimoto (1912) described the thyroid disturbance which now bears his name and much has been written about it, but there is still a general lack of knowledge of its clinical picture and consequent disagreement about its incidence. Moreover, most of the published cases having been treated surgically or by X-radiation (or both), the natural history of Hashimoto's disease is uncertain :

McSwain and Moore (1943), describing 15 cases treated by thyroidectomy, remark : "There is little evidence of the course the disease would take if not interrupted by removal" ; and Graham, discussing a paper by Lehman and Maiden (1947), comments "we are in the dark about the early stage of the disease and as to the natural end result in untreated cases, and yet . . . the ensemble is strikingly constant."

Although still considered rare by some workers (Simpson 1948, Spence 1953), in our experience in South Lancashire and in co. Durham struma lymphomatosa is not uncommon, and the diagnosis should come readily to the clincian's consideration. If a middle-aged woman shows evidence of hypothyroidism, however slight, and has a thyroid gland which is firm and easily palpable, it is reasonable to presume that she has Hashimoto's disease. Even in the absence of overt signs of hypothyroidism the discovery of an unusually firm thyroid gland in an adult woman should lead to laboratory investigation. In struma lymphomatosa abnormal laboratory findings usually include a low normal or subnormal basal metabolic rate (B.M.R.), a raised blood-cholesterol level, raised erythrocyte-sedimentation rate (E.S.R.), and the abnormal flocculation tests of liver function described later.* With this picture, diagnosis without recourse to open operation should be possible. Many thyroidectomies have been done unnecessarily in struma lymphomatosa because the firm goitre suggested malignancy, although it is generally agreed that hypothyroidism is very rare in untreated thyroid carcinoma. Exceptionally struma lymphomatosa presents with a syndrome indistinguishable from Graves's disease (Eden and Trotter 1942), and one of us (R. W. L.) has observed this presentation. Further, the patient may be euthyroid and the goitre may not be unusually firm to palpation.

Besides obviating a needless operation, accurate diagnosis of struma lymphomatosa leads to the correct treatment with dried thyroid gland, which, in our experience, not only abolishes all evidence of hypothyroidism but often produces a striking diminution of the goitre within a few months. Crile (1954) emphasised this point in a Moynihan lecture at the Royal College of Surgeons of England. It may be fortunate that the onset of frank hypothyroidism is accelerated by surgery and by X-radiation of the thyroid gland because the giving of dried thyroid gland after such treatment is the logical next step and has probably been the cause of ultimate recovery.

Liver-function Tests in Struma Lymphomatosa

Since 1952, working independently, we have observed strikingly abnormal results in certain liver-function tests made in patients with struma lymphomatosa (Cooke and Wilder 1954, Cooke and Luxton 1955) and we have found no previous report of similar observations. As a result of correspondence with G. Crile and his colleagues at the Cleveland Clinic these tests were added to their diagnostic procedures, and the validity of our observations was confirmed (P. G. Skillern 1955, personal communication to R. T. C.). Owing to a difference of approach our case-records lack uniformity ; nevertheless we describe our observations jointly here.

Flocculation tests of liver function were made in 24 patients with struma lymphomatosa not previously treated with dried thyroid gland. The diagnosis was confirmed histologically in 16 of these cases, and in the remainder the clinical picture was typical. 6 of the 24 patients had already had a partial thyroidectomy and 1 a course of X-radiation in addition. The flocculation tests used were the thymol turbidity and the colloidal gold. With 3 exceptions, in all these "untreated" patients the results of one or both of these tests were abnormal (examples illustrating the degree of abnormality are cited below). Of the 3 exceptions 2 were grossly myxœdematous patients who had had subtotal thyroidectomy five years and three and a half years previously ; the 3rd exception had had a large symmetrical goitre partly removed, the colloidal gold test being minimally abnormal (210000) when first recorded eleven days after the operation and normal eight months later, when she was frankly myxœdematous. In the course of treatment with dried thyroid gland the flocculation tests in 10 cases reverted to normal after an interval of from four to twenty-six months. This reversion depends on the dosage of dried thyroid gland ; suboptimal dosage, even if prolonged, may produce little change in the abnormal flocculation tests (see case 1 below). Once the optimal dose for each patient has been reached, the tests usually return steadily to normal in parallel with clinical improvement. The thymol turbidity is less sensitive than the colloidal gold test in this condition, being sometimes normal when initially recorded in the patient not treated with dried thyroid gland (6 of 19 cases in this series) and reverting more readily to normal when dried thyroid gland is given (see case 3 below).

In this group of patients the results of other tests of liver function are as follows :

Serum-albumin and serum-globulin levels were within the normal range in 14 ; 6 showed an increase in globulin.

Electrophoresis, undertaken in 6 cases, gave a normal pattern in 3 and showed an increase of γ-globulin in 3.

The serum-alkaline-phosphatase level was normal in 16 cases, slightly raised (11–15 K.-A. units per 100 ml.) in 3, and definitely and persistently high (15–27 K.-A. units) in 2.

The blood-cholesterol level was normal in 9 cases and raised (240–640 mg. per 100 ml.) in 15.

The serum-bilirubin level was normal (below 1·0 mg. per 100 ml.) at the onset in 23 cases. In 2 the serum-bilirubin level rose to 1·7 mg. per 100 ml. during treatment ; in 1 of these patients the bromsulphalein test was abnormal (19% retention at 45 minutes), whereas the other showed a bromsulphalein retention of less than 5%.

Galactose-tolerance tests, done in 6 patients, gave normal figures.

The bromsulphalein test (9 cases) gave abnormal figures (11·5–19·0% retention) in 5, an observation we consider important.

* McAlpine (1955) found the E.S.R. raised in 19 of 23 cases of hypothyroidism, including 4 of Simmonds's disease. In 21 of our cases of Hashimoto's disease the E.S.R. (Wintrobe adjusted for mean corpuscular volume) was above 15 mm. in the first hour in 10 cases, 10–15 mm. in 7 cases, and below 10 mm. in 4 cases. In 11 cases of clinical primary myxœdema seen in the past two years the E.S.R. was above 15 mm. in the first hour in 6 cases, 10–15 mm. in 4 cases, and below 10 mm. in 1 case.

Flocculation tests were also made initially in 23 patients already receiving dried thyroid gland by mouth after struma lymphomatosa had been diagnosed clinically and in 14 confirmed histologically; some of these patients had had thyroidectomy or X-radiation or both. In 18 patients flocculation tests were normal when first made from seven to fifty-seven months after the start of treatment with dried thyroid gland. In 4 other patients the colloidal gold test was abnormal when first made from seven to twelve months after the start of treatment with dried thyroid gland, but in 3 of these patients the test became normal or nearly so within twenty-nine months from the start of that treatment. In case 4 flocculation tests were grossly abnormal when first recorded sixty-one months after the start of treatment with dried thyroid gland and remained so for at least thirty-five more months.

Partial thyroidectomy had been done in 6 of the patients we were able to examine before treatment with dried thyroid gland was started. The intervals between the operation and the first flocculation tests were eleven days, thirteen months, sixteen months, three and a half years, five years, and nine years. The flocculation reactions were grossly abnormal in 3 of the patients, very slightly abnormal in 1 (eleven days after the operation), and completely negative in 2 (three and a half and five years after the operation). Clinically all 6 patients benefited by treatment with dried thyroid gland. In 2 cases the flocculation tests reverted to normal within eight months from the start of treatment with dried thyroid gland. Adequate time has not elapsed for us to assess the reversion of the tests in the remaining 2 patients. Our strong impression, however, is that subtotal thyroidectomy and radiotherapy, either singly or in combination, are inadequate treatment for struma lymphomatosa, as both clinical and biochemical results show, except in so far as these treatments remove pressure symptoms. Patients so treated usually require subsequent treatment with dried thyroid gland because surgery and radiotherapy accelerate the hypothyroidism found so commonly in untreated struma lymphomatosa.

Illustrative Case-reports

Case 1.—A woman, aged 45, had an open biopsy of the thyroid gland (Mr. H. M. Grant) in October, 1953, section showing typical Hashimoto's disease; previously she had been unduly sensitive to cold for two years, and had insomnia and thinning of hair; a small goitre had been present for six weeks. Six days after the biopsy she weighed 11 st. 7 lb., her B.M.R. was −24%, and the colloidal gold test of the serum was 542100. Dried thyroid gland gr. $^1/_2$ daily was given for six weeks, at the end of which the B.M.R. was −22%, the serum-cholesterol level 330 mg. per 100 ml., and the colloidal gold test 543210. The dosage of dried thyroid gland was increased to gr. 1 daily and continued until April, 1955.

Re-examined in April, 1955, she was still sensitive to cold, tired, and constipated, and her weight had increased by 12 lb. Her thyroid gland was still easily felt and firm, her B.M.R. was −21%, serum-cholesterol level 250 mg. per 100 ml., and colloidal gold test 442100. From April, 1955, she was examined regularly, and the dosage of dried thyroid gland was steadily increased to gr. 4 daily by September. During this time her B.M.R. increased in four successive steps to −2% and her weight fell to 11 st. 8 lb. The colloidal gold test had reverted steadily to normal by August. The patient had noticed diminution in the small thyroid swelling, but it was still palpable and firm.

Case 2.—A woman, aged 48, was first studied in October, 1952. For the previous four years the left lobe of her thyroid gland had been enlarged, and for nine months the right lobe also. No clinical signs of Graves's disease were noted except nervousness. From August to October, 1952, she had taken thiouracil 50 mg. daily.

On examination she was clinically hypothyroid, with puffy features and husky voice; goitre large and firm, especially the left lobe; serum-cholesterol level 320 mg. per 100 ml.; B.M.R. −18% (−36% two weeks later).

Progress.—In February, 1953, no dried thyroid gland having been given meanwhile, she appeared grossly hypothyroid, with a massive firm goitre (neck circumference 16$^1/_4$ inches); serum-cholesterol level 340 mg. per 100 ml.; B.M.R. −22%. Treatment with dried thyroid gland gr. 1$^1/_2$ daily was begun and continued for eleven months, when the B.M.R. was −28%, serum-cholesterol level 330 mg. per 100 ml., and colloidal gold test 555431. During the following eight months the dosage of dried thyroid gland was increased steadily to gr. 3 daily in September, 1954. Since July, 1954, the B.M.R. has been consistently normal. The colloidal gold test remained grossly abnormal (nine tests) throughout 1954 but reverted steadily to almost normal in four tests during 1955. The patient's weight has been almost constant (132–137 lb.) since October, 1952. In December, 1955, her goitre was barely visible (neck circumference 14 inches), but the left lobe is hard and easily palpable, and the right lobe very small but hard.

Case 3.—A woman, aged 42, complained of pain in both ankles, one knee-joint, and one interphalangeal joint of a finger. She was unaware of a firm diffuse goitre. She had gained 1 st. in weight in twelve months.

On examination in October, 1954, there was no gross sign of hyperthyroidism or hypothyroidism; a blood-count was normal; the serum-bilirubin and serum-alkaline-phosphatase levels were normal, with thymol turbidity 10 units, thymol flocculation 4+, colloidal gold 4+.

December, 1954: galactose index 114, serum-cholesterol level 265 mg. per 100 ml., B.M.R. +5%, radio-iodine tracer result normal, urinary excretion of 17-ketosteroids 8·42 mg. in twenty-four hours, bromsulphalein test (5 mg. per kg. of body-weight at fifty minutes) 16% retention.

January, 1955: surgical biopsy of thyroid (Mr. H. A. Haxton) showed advanced Hashimoto's disease (Dr. James Davson).

February, 1955: treatment with dried thyroid gland gr. 1 daily for two weeks followed by gr. 1$^1/_2$ daily was begun, when total plasma-protein level was 7·2 g. per 100 ml.; electrophoresis showed increased γ-globulin; thymol turbidity 5 units; thymol flocculation 1+; colloidal gold 4+; and serum-cholesterol level 240 mg. per 100 ml. The dosage of dried thyroid gland was increased to gr. 2$^1/_2$ daily in June, 1955.

July, 1955: thymol turbidity 4·5 units; thymol flocculation 0; colloidal gold 5+; serum-cholesterol level 240 mg. per 100 ml.

September, 1955: patient clinically well; goitre distinctly smaller but firm; serum-protein level 7·8 g. per 100 ml.; electrophoresis showed increased γ-globulin and α_2-globulin; thymol turbidity 2·5 units; thymol flocculation 0; colloidal gold 4+.

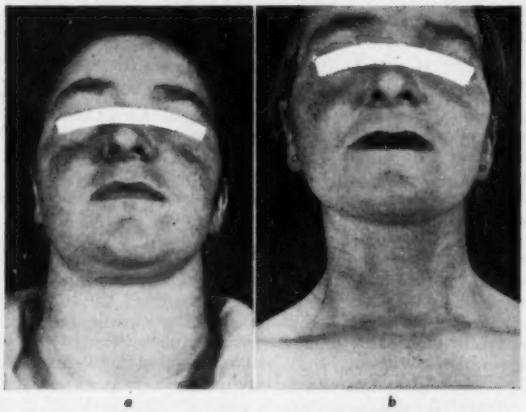
Evidence of Involvement of Liver and Spleen

In 1947 one of us (R. W. L.) observed hepatomegaly in a patient with struma lymphomatosa. The spleen became palpable in 1953, and clinical evidence of progressing hepatic cirrhosis was confirmed at laparotomy in 1955.

Case 4.—A woman first observed a goitre after confinement in November, 1946, at the age of 33. Subsequently she gained weight, her skin became dry and rough, and she lost some of her hair. In 1947 she consulted the late Mr. Peter McEvedy, who diagnosed Hashimoto's disease and referred her to the Holt Radium Institute for X-ray treatment; Mr. H. T. Simmons and Dr. Ralston Paterson likewise considered the diagnosis obvious and biopsy unnecessary.

On examination (R. W. L.) in November, 1947, the patient (fig. 1*a*) appeared well advanced in myxœdema, with dry yellow skin, flushed cheeks, loss of scalp hair, and husky voice. Her goitre was diffuse and moderately firm, but with several firmer areas. Her liver was enlarged, its lower edge being at the level of the umbilicus in the right mid-clavicular line. Her spleen was impalpable. Nothing abnormal was detected in other systems. Her past medical history was unimportant; there was no history of jaundice, infective hepatitis, or contact with a known case of hepatitis.

Treatment and Progress.—X-radiation of the goitre (3000r in eighteen days) was given in December, 1947, followed by treatment with dried thyroid gland by mouth. The goitre had disappeared eleven months after irradiation, and in October, 1949, the patient was euthyroid and without a



a *b*

Fig. 1—Case 4: *a*, before treatment; *b*, disappearance of goitre and of signs of hypothyroidism after treatment.

goitre (fig. 1*b*) and taking dried thyroid gland gr. 2 daily. In January, 1953, her liver was firmer and more nodular, but her spleen was impalpable and a blood-count normal; the patient was euthyroid; flocculation tests were abnormal (see table). In August, 1953, her spleen became palpable and subsequently increased slowly in size, as did her liver. In February, 1955, she had slight jaundice and normocytic anæmia (Hb 66%), the leucocytes being normal. In June, 1955, the clinical signs of advanced hepatic cirrhosis were evident: slight icterus, spider nævi in the skin, skin bruising, "liver palms." Prothrombin-time, coagulation-time, and bleeding-time normal. At laparotomy (Mr. Simmons) the liver was much enlarged and finely nodular; the size of the spleen was estimated at about eight times the normal; needle manometry of a gastro-epiploic vein showed a pressure of 25 mm. saline solution (normal).

Liver Histology (Dr. Davson).—The picture was that of rather advanced diffuse hepatic cirrhosis. Normal lobules were barely recognisable. The liver cells formed compact nodules of different sizes, apparently due to regeneration hyperplasia. The nodules were separated by bands of cellular vascular connective tissue (fig. 2), often wide, the infiltrating cells being mainly plasma cells and lymphocytes. Some infiltrations were dense and resembled lymphoid follicles (fig. 3). An unusual feature was the absence of proliferating bile-ducts. The histogenesis of this cirrhosis was not clear. Cholangio-hepatitis and cirrhosis developing in a fatty liver were unlikely causes. Post-hepatitis cirrhosis was a possiblity. There was no evidence of sarcoidosis, brucellosis, or hæmochromatosis.

Hitherto we have not felt justified in doing routine puncture biopsy of the liver in patients with struma lymphomatosa. However, we have had the opportunity to do a surgical biopsy of the liver in 2 other patients. In 1, suspected to have amyloidosis, biopsy of the thyroid gland showed Hashimoto's disease and the biopsy specimen of the liver was histologically normal. In the other patient cholecystectomy was done by Mr. Haxton for multiple small faceted biliary calculi. The histological report on the liver, agreed by Dr. Davson and Prof. A. C. P. Campbell, is as follows:

"This is certainly an abnormal liver. The Mallory-stained section shows an undoubted fine fibrosis extending here and there into the lobules, and the variation in size of the liver-cell nuclei is outside the range of normal. The lymphocytic infiltration in the portal tracts is within normal limits. The picture could result from previous infective hepatitis or cholangeio-hepatitis."

Persistent splenomegaly sufficient to make the spleen clinically palpable has been observed by one of us (R. W. L.) in 6 of 24 patients with struma lymphomatosa confirmed histologically in 5 of the 6 cases. In this condition the abdomen should always be most carefully examined; in a doubtful case a palpable spleen would support this diagnosis. The spleen is also palpable in about 10% of patients with Graves's disease.

LIVER-FUNCTION TESTS ON BLOOD-SERUM IN CASE 4

Date	Albumin (g. per 100 ml.)	Globulin (g. per 100 ml.)	Bilirubin (mg. per 100 ml.)	Alkaline phosphatase (K.-A. units per 100 ml.)	Thymol turbidity (units)	Thymol flocculation	Colloidal gold	Cholesterol (mg. per 100 ml.)
Jan., 1953	4·0	3·1	0·6	17·5	25	..	..	..
Aug., 1953	3·5	4·0	0·6	21·0	29	..	5	..
Jan., 1954	3·4	4·2	0·5	41·0	32	+ + +	3	..
Feb., 1955	2·9	5·2	1·1	32·5	40	+ + + + +	5	570
June, 1955	3·4	5·0	2·4	34·2	71	+ + + + +	5	..
Aug., 1955	..	..	1·6	31·0	>10	+ + + +	5	550
Oct., 1955	2·9	4·7	1·9	41·5	43	+ + + +	5	585

Discussion

Abnormal serum-flocculation tests do not necessarily incriminate liver function; they seem to depend on alterations in the serum-proteins. The concentration of γ-globulin in the serum is apparently the most important

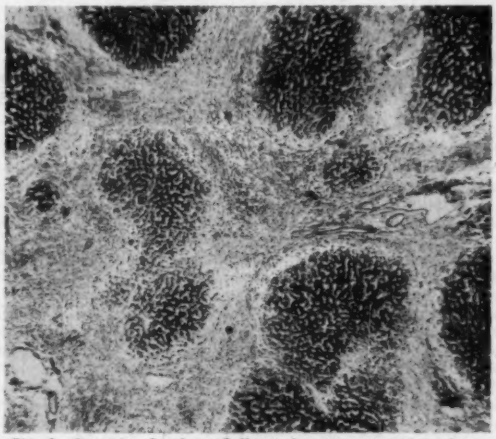


Fig. 2—Case 4: Section of liver showing connective tissue. (Mallory. ×20.)

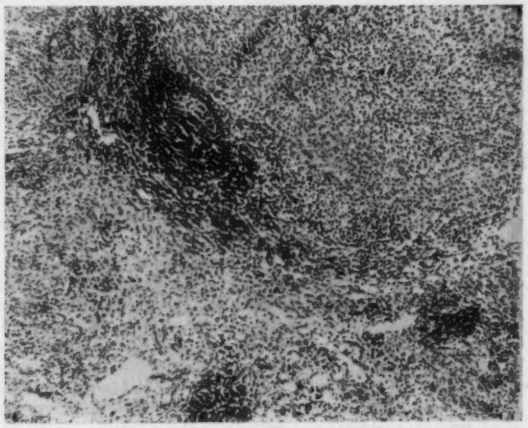


Fig. 3—Case 4: Section of liver showing lymphoid foci in portal tracts. (Hæmatoxylin and eosin. ×60.)

factor, the tests usually being positive when the γ-globulin is increased. Serum-albumin tends to prevent flocculation of the mixture, but in patients with liver disease the serum-albumin may be a much less effective "stabiliser." In liver disease, therefore, two factors may be concerned in the production of positive flocculation tests: an increase in γ-globulin, and subtle qualitative alterations in albumin and globulin without obvious quantitative change. N. F. Maclagan (personal communication to R. W. L.) believes that these changes in the proteins are evidence of reaction by reticulo-endothelial cells to various forms of irritation, infective and biochemical, and that this may explain negative flocculation tests in acute destructive processes affecting the liver—e.g., acute yellow atrophy. This view would explain the positive flocculation tests found in such chronic infections as malaria, bacterial endocarditis, rheumatic fever, rheumatoid arthritis, disseminated lupus erythematosus, and sarcoidosis. Other conditions sometimes giving positive tests include virus infections, sensitivity to sulphonamides and to penicillin, diabetes mellitus, myelomatosis, acute leukæmia, and infectious mononucleosis.

The observation of positive flocculation tests in struma lymphomatosa has certain implications. First, it may offer an additional means of diagnosis of the nature of a goitre, thus avoiding recourse to biopsy or to surgical exploration. The goitre in struma lymphomatosa is often firm enough to raise the question of malignancy. An extensive study of serum-flocculation tests in all forms of goitre is needed. So far we have not seen positive results in simple, toxic, or malignant goitres. We believe that hypothyroidism per se is not the cause of these abnormal flocculations for the following reasons:

(1) We have seen 4 patients with histologically proved Hashimoto's disease with grossly abnormal flocculation tests, 3 of whom were euthyroid and 1 hyperthyroid.

(2) We have seen 2 patients grossly myxœdematous after subtotal thyroidectomy three and a half and five years previously. Histologically the thyroid gland was typical of Hashimoto's disease in both. Neither patient had received dried thyroid gland before the flocculation tests were made, and the tests were completely negative.

(3) In 14 cases of apparently primary myxœdema seen in the past two years the serum colloidal gold test was normal in 11 and slightly abnormal in 3.

Secondly, the evidence here presented of involvement of liver and spleen in struma lymphomatosa suggests to us that the diseased thyroid gland produces some abnormal secretion which damages the reticulo-endothelial system as a whole. Scowen (1952) reports that subtotal thyroidectomy may cure struma lymphomatosa, and it may be relevant that 2 of our patients with histologically proved Hashimoto's disease not treated with dried thyroid gland, and with completely negative flocculation tests, had undergone subtotal thyroidectomy some years before the tests were made. (These patients were grossly myxœdematous, and surgery alone was clearly inadequate treatment.) Another possibility is that struma lymphomatosa is a form of reticulo-endotheliosis; this we think to be unlikely because the thyroid gland, always involved in struma lymphomatosa, is rarely affected to any significant degree in the common reticulo-endotheliosses.

Thirdly, we emphasise the return to normal of the flocculation tests simply on treatment with dried thyroid gland, and suggest that it may be due to the arrest and perhaps reversal of pathological changes in the reticulo-endothelial system. How the ingested thyroid gland causes this result we can only surmise; it may have a direct effect on the tissues of the reticulo-endothelial system, or it may affect the production of pituitary thyrotropic hormone, thereby also influencing the goitre. Some forms of hepatic cirrhosis and reticulo-endothelial disorder may thus be related to abnormalities in the thyroid secretion to a degree greater than is commonly believed.

Summary

Struma lymphomatosa is not uncommon. It should always be considered if a middle-aged woman presents with symptoms of hypothyroidism, however mild, and with a firm goitre, however small. Sometimes the patient is euthyroid, and occasionally the presenting clinical syndrome may be indistinguishable from Graves's disease.

Accurate diagnosis is important. Surgical exploration has been usual in the past, the firm goitre raising the question of malignancy, in which, however, hypothyroidism is rare. At present the correct treatment of struma lymphomatosa with hypothyroidism is dried thyroid gland by mouth in adequate dosage; this treatment reduces the goitre besides relieving the hypothyroid symptoms.

Serum-flocculation tests used as routine tests of liver function are abnormal in the great majority of patients with struma lymphomatosa not treated with dried thyroid gland. Thymol turbidity and colloidal gold tests are considered in relation to 24 such patients, in 21 of whom the tests were initially abnormal. Treatment with dried thyroid gland caused a reversion to normal in the flocculation tests in 10 cases in from four to twenty-six months. The reversion depends on adequate dosage with dried thyroid gland. The colloidal gold test is more sensitive than the thymol turbidity. Other laboratory observations in this group of patients are reported. The bromsulphalein test gave raised figures (up to 19% retention) in 5 of the 9 patients examined. The serum-bilirubin level, normal initially in 23 patients, became abnormal (1·7 mg. per 100 ml.) in 2.

In 23 other patients with struma lymphomatosa, treated with dried thyroid gland before serum-flocculation tests were made, the tests were normal in 18 and became normal in 3 others within twenty-nine months from the start of treatment with dried thyroid gland.

There is evidence that, in struma lymphomatosa, the liver and spleen may become abnormal: in 1 patient advanced cirrhosis of the liver developed. The abdomen should be carefully examined in possible cases of struma lymphomatosa, because a palpable spleen supports this diagnosis.

Implications of positive serum-flocculation reactions in struma lymphomatosa include the following: (1) the tests offer an additional means of diagnosis of a goitre without recourse to surgical exploration; (2) the diseased thyroid gland may produce some abnormal secretion which damages the reticulo-endothelial system as a whole; and (3) the reversion to normal of the flocculation tests when treatment with dried thyroid gland is instituted suggests a possible connection between thyroid activity and certain forms of hepatic cirrhosis.

We wish to thank the consultant and general-practitioner colleagues who have referred cases for investigation and opinion, especially Dr. Paterson, director of the Holt Radium Institute, Manchester, and his radiotherapeutic colleagues, the consulting surgeons of the Christie Hospital and Holt Radium Institute, and medical and surgical colleagues at Crumpsall Hospital, Manchester; Dr. Helen Russell, of the Christie Hospital and Holt Radium Institute, Dr. Lois Stent and Mr. D. Moss, of Withington Hospital Manchester, Dr. Davson and Mr. H. V. Street, of Crumpsall Hospital, Manchester, and the laboratory staff at West Hartlepool for their sustained assistance and interest; Mr. Grant and Dr. R. W. P. Jackson, of West Hartlepool, for permission to describe cases 1 and 2; Dr. E. Wilder for help in translation; Dr. Ranjit Sen and Mr. E. P. Sellars, F.I.M.L.T., for compilation of charts; Mr. F. Wardlaw for clinical photographs; and Mr. T. F. Shields, B.M.A. librarian, for help with references.

REFERENCES

Cooke, R. T., Luxton, R. W. (1955) *Lancet*, i, 968.
— Wilder, E. (1954) *Ibid*, i, 984.
Crile, G. jun. (1954) *Ann. R. Coll. Surg. Engl.* **14**, 158.
Eden, K. C., Trotter, W. R. (1942) *Brit. J. Surg.* **29**, 320.
Hashimoto, H. (1912) *Arch. klin. Chir.* **97**, 219.
Lehman, J. A., Maiden, S. H. (1947) *Trans. Amer. Ass. Goiter*, p. 21.
McAlpine, S. G. (1955) *Lancet*, ii, 58.
McSwain, B., Moore, S. W. (1943) *Surg. Gynec.-Obstet.* **76**, 562.
Scowen, E. F. (1952) *In* Horder, Lord, The British Encyclopædia of Medical Practice. London; vol. xii, p. 91.
Simpson, S. L. (1948) Major Endocrine Disorders. London.
Skillern, P. G., Crile, G., McCullagh, E. P., Hazard, J. B., Lewis, L. A., Brown, H. (1956) *J. clin. Endocrin. Metab.* **16**, 35.
Skirpan, P., Reich, A., Crile, G. (1955) *Amer. J. clin. Path.* **25**, 1274.
Spence, A. W. (1953) Clinical Endocrinology. London.

ADDENDUM

Our observation of serum-flocculation changes in struma lymphomatosa was described in letters to THE LANCET in 1954 (Cooke and Wilder) and 1955 (Cooke and Luxton). As a result of correspondence with one of us (R. T. C.) workers at the Cleveland Clinic Foundation have investigated the serum-colloidal-gold test in diseases of the thyroid gland, and since this paper was submitted for publication they have described their findings.

Skirpan et al. (1955) found a positive serum-colloidal-gold test in 15 of 19 patients with proved struma lymphomatosa and thought that the test was more sensitive than serum-cholesterol determination in establishing a diagnosis of primary thyroid failure with goitre.

Skillern et al. (1956), in a full and interesting review of the present Cleveland Clinic views on struma lymphomatosa, report an abnormal colloidal gold test in 20 of 25 patients, with abnormal Tiselius serum-protein patterns in 16 of these 20; in 4 with negative colloidal gold findings the plasma-protein pattern was essentially normal. In 11 patients with primary thyroid failure without goitre, 6 had positive colloidal gold tests. Treatment with desiccated thyroid did not reverse the colloidal gold curve to normal in most of their patients during the short period that they were observed. They also found 36 negative and 4 positive gold tests in 40 patients with non-toxic adenomatous goitre, and negative tests in 8 patients with Graves's disease and in 100 normal control patients. In an addendum they report abnormal gold reactions in 5 of 6 more women with proved struma lymphomatosa and also an abnormal result in 3 more patients with proved non-toxic adenomatous goitre, which, they comment, "further indicates that the colloidal gold test will not differentiate these two types of goitre."

Further work, not confined to thyroid disease, has been done at West Hartlepool by Dr. E. Wilder and Mr. E. P. Sellars, F.I.M.L.T., on the colloidal gold test and the serum-proteins, electrophoresis strips being scanned and the fractions estimated visually by comparison with normal range. The results suggest that a positive colloidal gold reaction indicates a relative increase in γ-globulin, and that it is inhibited by the α_2-globulin and, to a lesser extent, by the albumin fraction.

". . . Many of the doctors and nurses now working in underdeveloped countries have received a training which included very little in the way of pædiatrics or child welfare. They are not interested in these subjects and they are unwilling to admit their importance. . . . Among the indigenous people themselves, sickness and death among the children is taken so much for granted that it is difficult to persuade them that this need not be the case. . . . When the grim facts of such statistics have been realised, they are bound to provoke the authorities to action. But in many areas there is little attempt made to produce them, and then they are often grossly inaccurate. . . . The fourth reason for the neglect of child health is, I suspect, the need for adaptation. Some sections of medical effort can be transported wholesale from the advanced countries to the less advanced without any alteration of concept or objective . . . this is not so with child health work. The pattern that has grown up in this country is unsuitable for export. . . ."—Dr. CICELY WILLIAMS at Congress of Royal Sanitary Institute, April, 1955.

PRIMARY BILIARY CIRRHOSIS

IAN W. MACPHEE
M.D. Glasg., M.Sc. Lpool, F.R.C.S., F.R.C.S.E.
SENIOR LECTURER IN SURGERY IN THE UNIVERSITY OF LIVERPOOL

PRIMARY biliary cirrhosis is considered to be rare but is possibly not infrequently seen by surgeons whose lack of familiarity with it prevents them from recognising it. I have seen 6 cases in surgical practice in two years. The observations made and conclusions reached here are derived from continued clinical observation and serial liver biopsies.

Reviewing all cases of chronic biliary obstruction with generalised xanthomatosis published since 1851 Ahrens et al. (1950) found 92 cases of primary biliary cirrhosis, but in only 49 was the site of the obstruction in the biliary system confirmed by either operation or necropsy. Of these 49 cases the obstruction was extrahepatic in 24 and intrahepatic in 25. These workers add to this list 17 cases which they observed in six years and they have shown that the disease process is the same whether or not xanthomatosis is present.

In other studies of post-hepatitis and cirrhotic syndromes it seems possible that a small proportion of the cases were in fact biliary cirrhosis—e.g., several of the second type of post-hepatitis cirrhosis described by Ducci et al. (1951).

The clinical course and pathological features of primary biliary cirrhosis described here seem to show that this disease begins as an intrahepatic biliary obstruction affecting the liver diffusely throughout its substance.

Clinical Features

The clinical course of primary biliary cirrhosis, if the patient survives long enough, is here divided into three clear phases, which, however, merge into each other.

Stage 1.—This, the longest phase, is one entirely of *obstructive jaundice*. All clinical, biochemical, and pathological evidence points directly to an obstructive jaundice, which is found to be intrahepatic in all cases. The stage may persist for many months or even years, the intensity of the symptoms varying from time to time, and the liver finally becomes palpable below the costal margin.

Stage 2.—The gradual onset of symptoms suggesting *portal hypertension*—enlargement of the spleen, œsophageal varices with hæmatemesis, and bleeding from the rectum—is typical of this stage. Later, ascites becomes detectable, and during the whole phase obstructive jaundice persists. If the patient survives repeated hæmatemeses, the third stage develops.

Stage 3.—The stage of *liver failure* is characterised by the persistence of the signs and symptoms of the two previous stages but is associated with all the biochemical features of liver failure, and in addition hypoprotinæmia becomes severe, ascites becomes worse, and death results from hepatic insufficiency. This phase is shorter than the others, usually lasting only a few months.

Briefly, the first stage represents one of intrahepatic obstructive jaundice, the second stage seems to be that described by Hanot (1876) as biliary cirrhosis, and the final stage is that of liver failure.

The three distinct clinical stages have been observed in most of the cases, but possibly there is an early preliminary phase before the first stage is typically established. In 2 cases seen very early after the onset of jaundice the albumin : globulin ratio was reduced, the flocculation tests were clearly positive, and the typical perilobular fibrosis had not yet become established. At this phase the only abnormality seen on histological examination of liver sections was periportal round-cell infiltration. Thereafter the disease developed in the way described above. The evidence for this preliminary phase is, however, not so distinct, because most of the cases were not seen and investigated until a later stage.

FEATURES OF PRIMARY BILIARY CIRRHOSIS

Stage	Clinical features	Pathology	Biochemistry
Preliminary	Jaundice: painless, fluctuating, partly obstructive, but partly hepatocellular	Post-hepatitis changes: cellular infiltration around portal tracts	Similar to infective hepatitis
1	Obstructive jaundice: pale stools, bile-stained urine, pruritus	Perilobular fibrosis. No cell necrosis. Bile thrombi	Serum-bilirubin increased. A/G ratio normal. Flocculation tests negative. Alkaline phosphatase much increased
2	Obstructive jaundice and portal hypertension: splenomegaly, hæmatemesis Ascites	Liver as in stage 1. Spleen enlarged. Œsophageal varices	As in stage 1
3	Obstructive jaundice and portal hypertension, liver failure	Increased perilobular fibrosis; loss of liver structure. Multiple small areas of liver-cell regeneration	Serum-bilirubin increased. A/G ratio 1 or less than 1. Flocculation and turbidity tests + + + +. Alkaline phosphatase falling to range 30–50 K.-A. units

The salient clinical features are shown in the accompanying table.

Ætiology

In the 17 cases described by Ahrens et al. (1950) all known ætiological factors were considered and rejected because no specific factor leading to liver damage was found. Dr. S. Sherlock (personal communication), from a study of a comparable series of 19 cases, is also of the opinion that preceding infective hepatitis is not the ultimate cause. A comparable chronic biliary obstruction was reported by Hanger and Gutman (1940) and Watson and Hoffbauer (1946) either after treatment by arsenicals or subsequent to infective hepatitis. Although, therefore, the most detailed studies in the larger series seem to suggest that no known ætiological agent or process has yet been detected which initiates the liver damage, it remains possible that any hepatotoxic factor may be responsible. In the present small series 1 patient had infective hepatitis eight years before the onset of continuous jaundice, and he had two courses of gold therapy for subacute articular rheumatism three years before the liver damage became evident. For at least two years before jaundice became evident, however, he had fatty diarrhœa. In 1 other case an intravenous anæsthetic was injected for a minor surgical procedure three months before the onset of unrelieved jaundice.

In all the reported series adult women are most commonly affected. In the present series 3 patients were men and 3 women.

Pathology

There are two distinct stages in altered cytological structure of the liver which merge into each other and overlap the three clinical stages. During clinical stages 1 and 2 the appearance of the liver, although showing progressive periportal fibrosis, is basically similar throughout. During clinical stage 3, however, the second pathological stage of regeneration of liver-cells in a bile-stained liver is observed. In addition, it is possible that, in the preliminary clinical phase before stage 1, an initial appearance similar to that observed after acute hepatitis may be seen. This early change has been detected in only 2 patients, and the clinical course to that time is briefly described.

Case 1.—A woman, aged 59, three months after an intravenous injection, developed in March, 1954, jaundice which lasted a month. The jaundice subsided but recurred early in August, and she was admitted to hospital. The jaundice was typically obstructive in character and associated with pruritis but not with pain. On Sept. 29, 1954, at exploratory laparotomy the liver and spleen appeared normal, and no extrahepatic obstruction was found. A biopsy specimen of liver was taken. The jaundice has persisted ever since. The microscopic appearance of the liver section is shown in fig. 1. No necrosis of the liver-cells can be seen, and the only feature to be remarked is the chronic inflammatory-cell infiltration around the portal tracts. There is no fibrosis and no dilatation or proliferation of the bile-ducts, and only a few cells contain bile thrombi.

The most typical pathological features observed, however, extend during the greater part of the first phase and

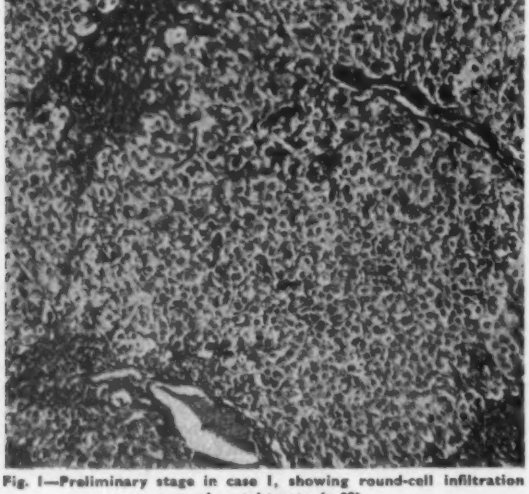


Fig. 1—Preliminary stage in case 1, showing round-cell infiltration around portal tracts (×80).

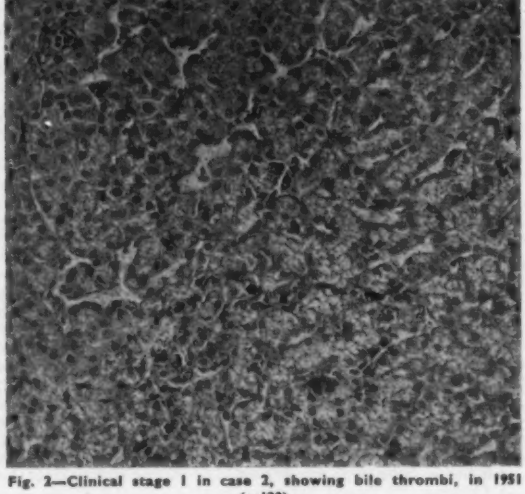


Fig. 2—Clinical stage 1 in case 2, showing bile thrombi, in 1951 (×120).

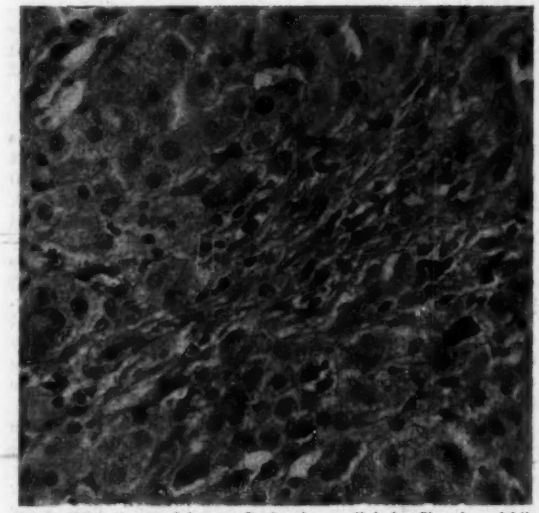


Fig. 3—Clinical stage 2 in case 2, showing perilobular fibrosis and bile thrombi, in October, 1953 (×360).

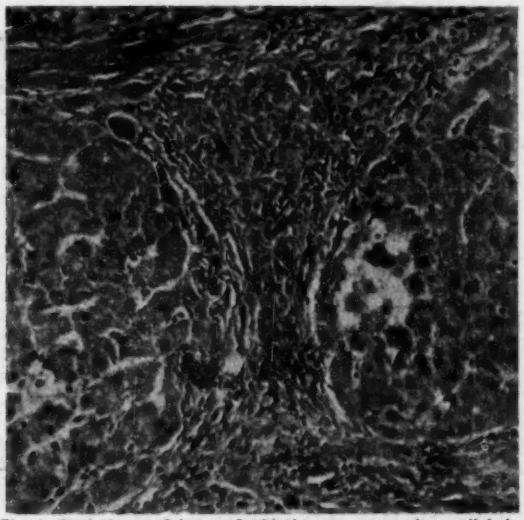


Fig. 4—Clinical stage 2 in case 2, showing more extensive perilobular fibrosis, in January, 1954 (×190).

through most of the second phase. During this time the liver is slightly or moderately enlarged and slightly bile-stained, and its surface is finely granular. The spleen also is enlarged.

The appearances in case 2 in 1951 are shown in fig. 2, in October, 1953, in fig. 3, and in January, 1954, in fig. 4. Each of these biopsy specimens was taken during exploratory laparotomy undertaken to verify the absence of any extrahepatic obstruction. The pressure in a portal radical was 10 mm. Hg in November, 1953. No ascites was present on any of the three occasions.

In all three sections no necrosis of liver cells can be seen, but a fine perilobular fibrosis is much in evidence, associated with the accumulation of bile in liver and Kupffer cells, and the bile passages are small and scanty. In 1951 these changes were scattered throughout the section, but in the two later sections they are present in every lobule. In addition, in the 1951 section, numerous infiltrating cells, chiefly lymphocytes, can be seen around the portal tracts, whereas in the later sections these are absent.

In short, the changes are progressive and show a gradual isolation of each lobule from its adjacent portal system by granulation tissue and fibrous tissue. The fibrous tissue appears to proliferate at the expense of the liver-cells, and because bile is not being delivered to the biliary ducts it accumulates in the liver-cells and the bile canaliculi. Because the biliary obstruction is not extrahepatic, there is no dilatation of the bile-ducts, and since there has been no ascending infection there is little or no inflammation around the portal tract. There is also no proliferation of the bile-ducts.

It is important to ensure that no extrahepatic obstruction is present, and in all 6 cases a most detailed examination of the duct system and of the portal fissure was made. In addition, in 3 cases the common bile-duct was opened and drained. At a later stage cholangiograms were obtained which showed no evidence of intrahepatic obstruction of the duct system. Finally, at the necropsy of case 3, the liver, duodenum, pancreas, and extrahepatic duct system were removed en masse, and both the extrahepatic and the intrahepatic duct systems were examined carefully to ensure that no gross organic obstruction was present. Moreover the changes described affected the whole liver and were not the result of obstruction to any of the major intrahepatic ducts.

During clinical stage 3, provided the patient does not die of hæmorrhage, diminished liver function can be detected. After death as a result of liver failure, the changes, especially in the liver, are now those of the second pathological stage: ascites is present; porto-systemic communications are evident; the liver is small, heavily bile-stained, and no longer granular but shows a typical nodular cirrhosis; and the spleen (if not previously removed) is much enlarged. Large shallow ulcers were found in the stomach in case 3.

Fig. 5 shows the macroscopic appearance of the cut liver surface in case 3 at necropsy. The previously noted perilobular fibrosis has extended, and the normal liver lobules are very much reduced in size, and many have all but disappeared. The previously noted features around the portal tracts remain unchanged. The most striking change, however, is the development of new areas of liver tissue in isolated collections typical of multilobular cirrhosis and not lying in a normal relationship to the established portal tracts. These masses of regenerated liver-cells are comparable to the similar changes observed

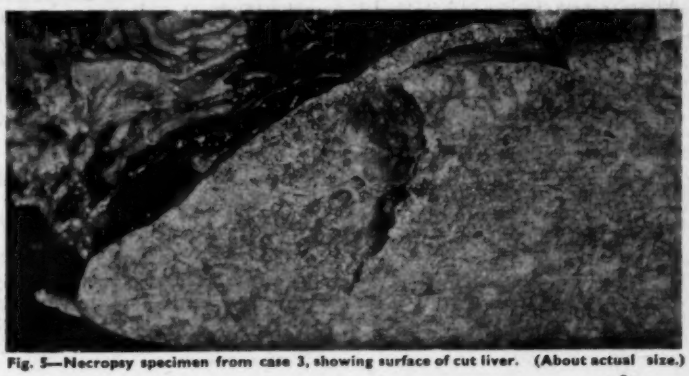


Fig. 5—Necropsy specimen from case 3, showing surface of cut liver. (About actual size.)

in Laennec's cirrhosis and appear to be a response to impending failure of the pre-existing liver lobules. This would accord with the clinical course and biochemical features.

Biochemistry

During the whole of clinical stage 1 and for the greater part of clinical stage 2, the laboratory findings suggest only an obstructive jaundice. The stools are pale and contain excess fat, the urine contains bile-salts and pigments, and urobilinogen is not increased. The serum-bilirubin level varies but is persistently raised, the serum-alkaline-phosphatase level remains very high throughout, and the thymol-flocculation, scarlet-red, and thymol-turbidity tests do not suggest any liver damage. For the greater part of clinical stage 1 the prothrombin index is 40–60% of normal, the albumin/globulin ratio remains normal, and hypoproteinæmia is slight. Apart from persistent anæmia, no abnormality of the blood has been noted. Towards the later part of clinical stage 2 the anæmia tends to become more severe in spite of repeated massive transfusions for hæmatemesis and melæna.

As the patient progresses towards clinical stage 3, however, signs of disturbance of liver function in addition to the jaundice can be found: hypoproteinæmia develops, the albumin/globulin ratio falls and may become reversed, and the thymol-flocculation, scarlet-red, and thymol-turbidity tests point to reduced liver function. These changes tend to be progressive until death.

The accompanying table shows the typical clinical features, pathological changes, and laboratory findings during the three clinical stages of primary biliary cirrhosis.

Prognosis

It seems that the progress of primary biliary cirrhosis is relentless and its changes are irreversible. Of the 17 patients described by Ahrens et al. (1950) 6 died from two to seven years after the onset of jaundice, and 11 were still alive from two to eleven years after the onset of jaundice. Of the present 6 patients 2 died at the end of clinical stage 3 two and a half years after the onset, 1 patient has reached clinical stage 3 four years after the onset, and the remaining 3 patients are in clinical stage 2 one and a half years, a year, and a year after the onset of jaundice.

Treatment

Treatment should ideally be aimed at either preventing or reducing both the initial and the progressive liver-cell damage. Since the factors involved are unknown, this has not proved possible. Treatment is therefore symptomatic, once extrahepatic biliary obstruction has been excluded.

A fat-free diet reduces the abdominal discomfort and the fatty diarrhœa sometimes present. Methyltestosterone appeared to relieve the pruritis in 3 patients. Vitamin K seems to raise the prothrombin index in the early stages but not later, and the results of treating the anæmia with iron are difficult to assess. When signs of portal hypertension develop, a decision has to be made about further surgical treatment. Since death from liver failure seems to be inevitable, a portacaval shunt is probably unjustified. At the most, splenectomy may be of some temporary help. Repeated hæmatemeses require blood-transfusion, and this became so frequent in 2 of the present patients that an operation was undertaken to excise the obviously enlarged veins around the lower end of the œsophagus and to transect the stomach just below the œsophagogastric junction and to resuture it. It is difficult to know whether this operation is of more than temporary benefit. This temporary benefit can be very real. Case 2 had twelve major hæmatemeses within a year but has not had any bleeding in eight months after the operation.

To arrest the apparently progressive perilobular fibrosis cortisone was tried in 2 cases. The effect of 50 mg. daily, regulated according to the patient's weight, has been studied for only four months. Both patients claimed much symptomatic improvement, although the intensity of the jaundice does not appear to have varied and no significant physical change has been observed. Further liver-biopsy specimens have not yet been obtained, and the progress of these patients will have to be observed with care.

Discussion

The interpretation of the liver changes after hepatitis has always been considered difficult even by those best qualified to speak. The relationship of hepatitis to cirrhosis has been considered in detail by Sherlock (1948), Ducci et al. (1951), Baggenstoss and Stauffer (1952), and many others. The distinct clinical pattern of primary biliary cirrhosis, as described here, does not seem to have been described before, and it may have been interpreted erroneously. The opportunity to obtain serial liver-biopsy specimens, however, has made possible a careful clinicopathological study of these patients. Based purely on the clinical and pathological evidence, the following assumptions about the progress of the disease and the onset of cirrhosis seem relevant.

Dible et al. (1943) have shown that, as a result of acute hepatitis, various degrees of residual damage may persist in the liver, although in most cases resolution takes place They noticed, in some instances, layers of perilobular granulation tissue surrounding the lobule; but, since true primary biliary cirrhosis is rare, they assumed that resolution must take place without further damage to the structure of the liver lobule. If, however, such a periportal reaction were to persist, or if the liver lobule were to sustain some unknown form of damage which led to this perilobular fibrosis, conditions would be ripe for the development of biliary cirrhosis at a later date. If, as the liver sections suggest, this fibrous tissue reaction were to produce an obstruction between the lobe and its adjacent portal ducts, an intrahepatic obstruction of the type here described would develop. In all other respects the liver would continue to function normally, and so regeneration of fresh liver-cells would not be required. During this long phase of purely obstructive jaundice there is no danger of death from liver insufficiency except at the earliest stage, when acute liver damage may still be taking place. This long phase of obstructive jaundice is in some respects similar to that seen in congenital atresia of the biliary ducts in that there is no danger of ascending infection and of further cellular damage to the liver.

Once such an intrahepatic obstruction has been established in every lobule, clinical stage 1 is fully developed. Obstruction to another of the liver's systems appears then to develop—the portal venous system. This portal venous obstruction in the presence of a continuing jaundice appears to be typical of clinical stage 2. For some reason the amount of functioning liver tissue gradually decreases, but whether it is due to the continued action of the initial damaging agent or to strangulation by the perilobular fibrous tissue is not clear. Whatever the cause, the third and most important set of liver functions becomes imperilled, and hepatic insufficiency develops. Perhaps, as a response to this diminished function, regeneration of isolated nodules of hepatic cells takes place, leading to the final picture of true portal cirrhosis in addition to the initial biliary cirrhosis.

Conclusions

Primary biliary cirrhosis, a disease of obscure origin, may result from some unknown hepatotoxic agent but may possibly develop in some cases after infective hepatitis. It may account for some of the undiagnosed cases of long-continued obstructive jaundice which are often seen by surgeons, and in which no conclusive diagnosis is reached.

A distinct clinical course has been described here which has not, to my knowledge, been reported elsewhere. The

three clinical stages of obstructive jaundice, of obstructive jaundice and portal hypertension, and of hepatic insufficiency are associated with distinct pathological and biochemical changes. It is concluded from the serial biopsy specimens of the cases described that the perilobular fibrosis accounts for the successive clinical stages and for the associated pathological changes.

It has not yet been shown that cortisone is of any value in either arresting or reversing the progress of primary biliary cirrhosis. Where hæmatemesis is severe, however, splenectomy and œsophagogastric transection have proved of great value to the patient.

I am grateful to my colleague Mr. J. Shepherd, of Broadgreen Hospital, Liverpool, who has placed at my disposal the records and the liver sections of 3 of these patients. The photomicrographs were taken by Mr. W. Lee, of the medical photographic department, University of Liverpool.

REFERENCES

Ahrens, E. H., Payne, M. A., Kunkel, H. G., Eisenmenger, W. J., Blondheim, S. H. (1950) *Medicine, Baltimore*, **29**, 299.
Baggenstoss, A. H., Stauffer, M. H. (1952) *Gastroenterology*, **22**, 157.
Dible, J. H., McMichael, J., Sherlock, S. P. V. (1943) *Lancet*, ii, 402.
Ducci, H., Barahona, R., Barzelatto, J. (1951) *Gastroenterology*, **17**, 45.
Hanger, F. M. jun., Gutman, A. B. (1940) *J. Amer. med. Ass.* **115**, 263.
Hanot, V. C. (1876) Etude sur un forme de cirrhose hypertrophique, Paris, thesis 465.
Sherlock, S. (1948) *Lancet*, i, 817.
Watson, C. J., Hoffbauer, F. M. (1946) *Ann. intern. Med.* **25**, 195.

THE ROTHERHAM LEAD-POISONING OUTBREAK

ELIZABETH TRAVERS
M.A. Vassar, M.B. Manc., Ph.D. Columbia
CONSULTANT PATHOLOGIST,
ROTHERHAM AND MEXBOROUGH HOSPITALS, YORKS

JOHN RENDLE-SHORT
M.A. Camb., M.R.C.P., D.C.H.
LECTURER IN CHILD HEALTH IN THE UNIVERSITY OF SHEFFIELD

CEDRIC C. HARVEY
M.D. Lond., M.R.C.P., F.R.C.S.E.
CONSULTANT PÆDIATRICIAN,
ROTHERHAM AND MEXBOROUGH HOSPITALS, YORKS

THE outbreak of lead poisoning at Rotherham in 1954 has already been described by Gillet (1955). We describe and discuss here some of the cases which we studied then.

Case-reports

Case 1.—A toddler, aged 18 months, was admitted to Moorgate Hospital, Rotherham, on Sept. 30, 1954, with three weeks' history of vomiting. He had two convulsions on the day of admission, leading to coma, with convulsive twitching of lips, face, and left hand. He had bilateral papilloedema. His cerebrospinal fluid (C.S.F.) contained protein 650 mg. per 100 ml., sugar 65 mg. per 100 ml., white cells 67 per c.mm. (polymorphs 46%, lymphocytes 54%) but no tubercle bacilli. A blood-count showed 3,500,000 red cells and 14,000 white cells per c.mm., and Hb 55%. Further convulsions on the next two days led to his transfer to the Sheffield Children's Hospital, tuberculous meningitis being suspected. It was there thought that he had a cerebral tumour, and he was transferred to a neurosurgical unit, under Mr. J. Hardman. Air encephalography and other investigations failed to show a tumour, and since the boy was improving he was discharged home with instructions to attend as an outpatient.

Readmission.—After three weeks at home he was readmitted to Moorgate Hospital, having begun to vomit the previous night and having had five convulsions since midnight. On admission he was semicomatose, with head and eyes deviated to the right and with increased tone on the right side. There was slight blurring of the optic discs on admission; but these cleared, and his neurological signs disappeared, with complete recovery of consciousness within three days.

Investigations.—The C.S.F. contained protein 260 mg. per 100 ml. and 3 cells per c.mm. on Nov. 17, and protein 85 mg. per 100 ml. and 14 cells per c.mm. on Nov. 24. A blood-count showed anæmia as before.

While case 1 was in hospital this second time, his 2 brothers were admitted with jaundice, and 1 of them died (case 2).

Case 2.—A boy, aged 5 years, brother of case 1, was admitted to Moorgate Hospital on Nov. 20, 1954, with the diagnosis of infective hepatitis of a week's duration, with copious vomiting and brown urine. He had had one fit on Nov. 18 and four fits on Nov. 19.

On admission he was very drowsy but had no more fits. Examination revealed anæmia, with Hb 56% (8·3 g. per 100 ml.), a raised serum-bilirubin level (1·2 mg. per 100 ml.), excess of urobilin in the urine, and C.S.F. containing protein 65 mg. per 100 ml. and 25 white cells per c.mm. Next morning the boy collapsed, with sunken eyes, imperceptible pulse, and slight twitching of limbs, and died in a quarter of an hour.

Necropsy showed a normally nourished body with slight jaundice of the skin. The liver was abnormally pale and yellow, but histological changes were meagre and included no necrosis. The brain was œdematous but microscopically showed no distinctive changes. Death was attributed to virus encephalitis in the course of infective hepatitis.

Case 3.—Three weeks after the death of case 2, a toddler, aged $2^1/_2$ years, from a neighbouring street was admitted by a different practitioner to another hospital in status epilepticus on the evening of Dec. 14, 1954, with the story that his elder brother, case 5, had twice been an inpatient in another hospital with convulsions. It was difficult to elicit a clear history, but he was said to have had jaundice with much vomiting and loss of appetite three months earlier. After a month in bed he had gradually improved but had not completely recovered. Vomiting had again become frequent over the month immediately preceding admission, with some episodes of screaming and holding his head. He had two major fits before admission, without recovering consciousness.

After admission a third fit began with clonic movements in his left arm and face. He had a left plantar extensor response. His fundi did not show gross papilloedema. Despite anticonvulsant emergency treatment, clonic movements persisted on his left side, without recovery of consciousness, and he died fourteen hours after admission.

Necropsy showed a normally nourished body. The liver showed no naked-eye or microscopic evidence of either hepatitis or necrosis. There was considerable œdema of the brain.

Case 4, aged 3 years, brother of case 3, had been admitted, two days before his brother's fatal illness, to Moorgate Hospital with a "febrile convulsion" but had been removed by his family, against medical advice, on learning of the death of case 2. Four days after case 3 had died, case 4 and his twin (case 5) were seen as outpatients with an acute respiratory infection. Finally, their family doctor, Dr. M. Dziemidko, diagnosed lead poisoning and arranged their direct admission on Dec. 20, 1954, to Sheffield Children's Hospital, where, for the first time, it was found that all these 5 children came from adjacent houses.

Cases 4 and 5.—These twin boys, aged $3^1/_2$ years, brothers of case 3, had been ailing for three months before admission to Sheffield Children's Hospital. The onset in case 4 consisted in colicky abdominal pain and attacks of screaming and vomiting. He had four convulsions. He continued constipated and pale. His sleep became poor, and his face and limbs began to twitch before admission. Case 5 had jaundice at the onset, with frequent vomiting and dark urine. A few days before admission he became constipated and began vomiting and screaming. Both children developed an acute infection of the upper respiratory tract with cough and pyrexia the week before admission, and case 5 had a further convulsion.

On admission both children were pale and drowsy, with restless coarse tremors of the hands. Both had a left internal squint. The optic fundi showed gross papilloedema but no exudate or hæmorrhage. There was no neck stiffness. Radiography of long bones showed at the epiphyses the lines of greatly increased density suggesting lead poisoning. The diagnosis of lead poisoning was subsequently supported by the presence of punctate basophilia. The urine contained coproporphyrins but no bile or urobilinogen. Liver-function tests were normal.

As soon as the diagnosis was established by radiography the question arose how the lead had been obtained. Since the largest reported epidemic of lead poisoning was due to burning old batteries (Williams et al. 1933), the twins' grandmother was asked whether the family used this type of fuel. She said that they did, and so did many of their neighbours. An urgent telephone message was therefore sent to Dr. J. A. Gillet, medical officer of health for Rotherham, who immediately sent out police cars with loud-speakers to warn people of the danger of burning old batteries. The other administrative steps which he took have been already published (Gillet 1955).

Review of Cases 1-3

As soon as we had thus belatedly diagnosed lead poisoning we reviewed the diagnosis in cases 1–3, because it seemed almost certain that they too had had lead poisoning, though the history of jaundice was confusing.

Case 1 was therefore readmitted on Dec. 21. He had been vomiting for three days but was walking normally, though he showed slight tremor of his hands. Radiography showed very gross zones of lead in his long bones, and his blood contained stippled cells 1·0% and reticulocytes 7·5%. His urine contained coproporphyrins.

On the same day we admitted a brother of his, aged 7 years, with jaundice, abnormal liver-function tests, a high count of stippled red cells, and C.S.F. containing protein 50 mg. per 100 ml. A month earlier, when the 5-year-old brother (case 2) died, this boy had been vomiting and had anæmia, enlargement of his liver, and faint jaundice of his skin.

The 2 boys who died (cases 2 and 3) came of different families and had been attended by different practitioners; they were sent into different hospitals and presented different syndromes. They are reported by permission of H.M. coroner for Rotherham, who arranged for their exhumation. Their tissues after exhumation were examined by Dr. G. Forbes and Dr. D. W. Auchinachie and contained much lead in bones, kidneys, livers, spleens, brains, and lungs (table I).

TABLE I— LEAD ANALYSIS IN FATAL CASES
(mg. of lead per 100 g. of wet tissue)

Tissue	Case 2	Case 3	3 years' short period of ingestion*	54 years' severe dust inhalation*	Normal (4 yr.)*
Bone (flat) ..	10·42	9·92	10·65	13·00	1·02
Bone (long) ..	7·00	6·10	..	8·00	1·14
Kidney ..	1·39	1·56	0·61	0·22	0·06
Liver.. ..	1·12	1·28	3·27	0·71	0·05
Spleen ..	1·87	2·00	1·25	0·86	Nil
Brain ..	0·40	0·52	0·29	0·35	0·01
Lungs ..	0·24	0·29	0·09	0·08	0·03

* Cases for comparison cited by Gradwohl and Kouri (1948).

Screening of Outpatients

As soon as lead poisoning had been diagnosed, the question arose how many other children in the district might be similarly affected. For this reason all children living in or visiting this district of Rotherham were collected by the public-health authorities and examined by one of us (E. T.). 223 children were seen, of whom 140 were selected for further clinical and radiographic study because they seemed to have been definitely at risk. 8 other children defaulted on further examination and are excluded from our figures. At the same time 125 adults of these households were examined, but none showed clinical or hæmatological proof of plumbism.

The clinical picture in these families showed a striking uniformity of catarrhal, reluctant, squealing toddlers inaccessible to formal neurological testing. The account which could be obtained from parents varied greatly in its clarity It was uncertain what would be the significant questions to ask. It became evident that prevailing respiratory epidemics would obscure much possible evidence of the slighter deviations from normal in temperament, motor power, and coördination. Some parents were indignant at this interference with their way of life and at the withdrawal of their chosen fuel.

Hæmatological Study

For each child the Hb, red cells, white cells, and stippled red cells were estimated. Proved cases of lead absorption yielded, on average, Hb 10% lower than did unaffected children.

Stippled-cell counts of 0·02% or more of red cells were accepted as positive on the basis of industrial practice, although we had no guidance about whether this threshold would be valid over the age-range of childhood. 7 cases which we recorded as not proved showed 0·01% stippled cells. These might well have been dropping to normal from a significant level before the first blood-count. The few serial counts which we made showed a rapid drop to normal within three to six weeks after cessation of exposure. It may be reasonable to infer that, in children, continued exposure to, and absorption of, lead are necessary to keep up the process of perverting young red corpuscles. Since we began to study these cases, stippled cells have not been seen once in some hundreds of blood-films of children not exposed to lead. They are regarded not as a phase of normal maturation but as specifically pickled corpuscles in which the basophilic material of the cytoplasm and cell membrane has been altered by lead. Wintrobe (1946) points out that stippling is not peculiar to lead poisoning, and that in healthy people this cytoplasmic change may be seen in 0·01% of the red cells, which is below the threshold of significance which we have used.

Radiology

With the prospect of requiring several hundred films to be exposed we were at a loss to know which would be the most significant bones to study, and how deviation from normal appearances could be estimated at widely differing ages, from 3 months to 15 years. In the older children, in whom the rate of growth at the metaphysis was slowing down in the long bones, exposure to lead did not produce sclerosis as graphic as the broad zone seen in some of the toddlers. The clearest deposits were seen at the lower end of the femur shaft, with a zone almost as sharp, in some cases, in the associated upper end of tibia. The lower end of the radius and the ulna also, in a smaller number of cases, gave apparently conclusive findings. In none of 11 cases in which the iliac crest was filmed did we see any curved outline of lead deposit. In no case with a dubious femur did other bones contribute decisive positive evidence. The knee alone would have sufficed for a rapid large-scale survey.

The less gross changes need to be interpreted with caution, because some healthy children may show zones of increased density of heavy calcium deposit (McKhann and Karpinski 1948). The radiographic appearances in the growing bones in lead poisoning are due to the formation of closely packed trabeculæ, which, moreover, contain considerable deposits of lead. These can be shown, by suitable staining, as fine black-brown granules, which are most abundant in the compact region close to the cartilage (Marsden and Wilson 1955).

Some of our cases showed multiple "growth lines" in the shafts of the long bones, which might have been due to condensation of recurring zones of dysplasia with intermittent absorption of lead and intervals of healing (Caffey 1931, Vogt, 1932). The evolution of the dense zones seen in our more severely affected cases is being followed by serial films.

Analysis and Findings

Our findings in the 140 children who were fully examined were as follows:

	No. of cases
Encephalopathy	6
Evidence of absorption of lead without signs of poisoning	54
Absorption of lead not proved	80

In the 54 cases of simple absorption of lead the basis of diagnosis was as follows :

	No. of cases
Blood positive, radiograph positive	16
Blood positive, radiograph negative	3
Blood negative, radiograph positive	35

The ages of the children ranged from 15 years to 11 weeks. 4 were aged less than 1 year.

Jaundice

A large proportion of the children gave a history of jaundice during the previous five months. This caused us concern initially because of the possibility that some heavy metal or other poison was damaging the liver, especially since one of the children who died was jaundiced. Plumbism has been described as causing jaundice (Aub et al. 1925, Burrows et al. 1951), but it is usually mild and is due to excessive hæmolysis. 13 of the children showing evidence of absorption of lead and 16 of those in whom the absorption of lead was not proved had had jaundice within the previous four months. 9 children showed residual impairment of liver-function tests at their first blood examination. Comparison with experience in other areas of the town and district led us to consider that these cases of jaundice were ordinary epidemic infective hepatitis, which was then prevalent. Some of the children had apparently had jaundice and had transmitted it to siblings before the exposure to lead. The cause of the jaundice appeared to be confirmed by the fact that, thirty-two days after the admission of the jaundiced children with lead poisoning to hospital, a nurse and an ambulant diabetic child in the ward both developed infective hepatitis. Other possible causes of jaundice from the burning of old batteries—e.g., arsenic and hydrocarbons—were considered but eventually rejected as unlikely.

Selection of Cases for Inpatient Treatment

During the first few days we had to make up our minds which children should be admitted to hospital for further observation and treatment. It was decided to admit those with neurological lesions, jaundice, or any dubious symptoms. The total number admitted for these reasons was 8.

Accurate neurological assessment was difficult because the signs of minimal encephalopathy may amount to little more than a slight tremor and increased irritability. Examination of the C.S.F. protein would probably help.

The children with jaundice were admitted both because of the danger of infective hepatitis to the child and because it was feared that the infection might precipitate encephalopathy.

The count of stippled cells was used as a valuable indication of recent exposure, but it fell rapidly as soon as a child was removed from the source of lead. It was therefore of little value except in acute cases.

In this outbreak the cases of definite encephalopathy showed gross blood and radiographic changes. We suggest that it would be reasonable, in future outbreaks, to reckon that children with dubious radiographs and negative or low counts of stippled cells are not in danger of encephalopathy. The lapse of time after ceasing to be exposed to lead would need considering, however, because stippling rapidly disappears. Chisolm (1955) found that the urinary output of coproporphyrin was the most useful biochemical index of toxicity.

Treatment and Results

In cases 4 and 5, who had lead encephalopathy with raised intracranial pressure, repeated lumbar puncture removed considerable quantities of fluid. For fear of producing a medullary pressure cone ventricular taps were first attempted through the open sagittal sutures. These were unsuccessful, probably because œdema of the brain had considerably reduced the ventricles. The lumbar pressure was 400 mm. of C.S.F. and 5 ml. was removed on the first occasion, with a further 15 ml. four hours later, which lowered the pressure to 200 mm. Daily lumbar punctures were continued for six days on both children. The C.S.F.-protein level was initially high in both cases (140 mg. per 100 ml.) but fell gradually to normal.

In addition to C.S.F. drainage both children received two five-day courses of calcium ethylenediaminetetra-acetic acid (E.D.T.A.) intravenously, totalling 12 g.

The general condition of both boys slowly improved ; in three weeks they were running about the ward and had lost their tremor and squint. They remained aggressive and destructive. The appearance of the optic fundi under basal narcosis improved much more slowly, being not fully normal after a month in case 6, and after even two months in case 5. Electro-encephalography was done in case 5 on Jan. 7, 1955, by Dr. J. W. Warboys, who reported : "The activity is generally of low amplitude for his age, with irregular low to moderate amplitude, 3–4 cycles per second waves occurring irregularly in all areas." This investigation was repeated on Feb. 11, 1955, when the tracing was reported as normal for his age.

The intelligence-quotient of the children was measured on Feb. 17, 1955, by Mr. L. B. Birch, of the Institute of Education, University of Sheffield, and was 63 for case 4 and 72 for case 5 on the Terman-Merrill scale. No previous intelligence testing had been done with either child, and it is impossible to say whether these low figures are solely attributable to the plumbism. From their developmental history there are indications that the children were previously somewhat backward.

E.D.T.A. was given to 4 other children who were thought to have encephalitis. The dosage given was that advised by the manufacturers *—i.e., 1 g. per 30 lb. of body-weight, diluted in 250–500 ml. of glucose saline solution and given intravenously over two hours daily for five consecutive days.

The main disadvantage of this form of treatment in small children is the practical difficulty of giving a drug intravenously over two hours on five consecutive days. Venepuncture being usually impossible, a vein was exposed and polyethylene tubing inserted. After the infusion of E.D.T.A. had been given by this means, a syringe was left connected to the end of the polyethylene tube, and a few ml. of physiological saline solution was injected every half-hour. This was found to be sufficient to keep the tube and vein patent.

TABLE II—URINARY EXCRETION OF LEAD (MG. PER TWENTY-FOUR HR.) DURING FIRST THREE DAYS' TREATMENT WITH CA E.D.T.A.

Case no.	1st day	2nd day	3rd day
1	0·64	1·41	0·68
4	2·34	1·28	1·34
5	0·92	2·42	0·69

It was not considered justifiable to make a controlled study on the use of E.D.T.A., in view of the known poor progress of lead encephalopathy in children and the excellence of the reported results of treatment with E.D.T.A.

Table II shows the relatively large amounts of lead recovered from the urine of some of the children in this series. The quantity excreted by children with acute lead poisoning not treated with E.D.T.A. is about 0·3 mg. per twenty-four hours. It would therefore seem advisable to treat with E.D.T.A. any child with signs or symptoms attributable to acute lead poisoning.

* Messrs. Rikser Laboratories Ltd., Loughborough.

Other Therapy

In addition to giving E.D.T.A. to some cases, all the children in hospital had sodium citrate and a high-calcium diet in the form of extra milk and calcium lactate. They were also given vitamin D to aid the absorption of calcium. At first sight it may appear irrational to give calcium, which has long been known to promote the storage of lead (Aub et al. 1925) at the same time as giving E.D.T.A. to hasten its excretion; but, since the toxic effects of lead are exerted almost entirely on the blood and soft tissues, it was considered important to aid the elimination of lead from these structures as rapidly as possible and by any method available.

The Source of the Lead

Scrapped lead batteries were found to be in widespread use in one area of the town, as a cheap substitute fuel on open fires, especially when funds would not meet the cost of coal. In some households the burning of batteries was intermittent as pay-day drew near, whereas in others it was a more constant practice. A hand-cart, sackful, or pram-load of broken batteries cost from 6*d*. to 1*s*. at a neighbouring scrap-yard.

A Sheffield parent, alarmed by newspaper reports, subsequently consulted Prof. R. S. Illingworth about her children because she had for several months burnt car batteries in her home. For the sum of £1 she had obtained a bargain lot of three tons of old batteries, which had been placed in her cellar, and she now wanted to know whose responsibility it was to remove the hazard. Her children on examination were found to be unaffected.

Our information about the exposure of these children correlated better with ingestion as the portal of entry rather than with the suggestion in some earlier accounts (Williams et al. 1933) that the lead placed on domestic fires produced fumes which were inhaled. The only possible inhalation is of particulate lead in dust from the bulky ash, or dust off the surface of unburnt fragments of the batteries. In the present families toddlers were regularly engaged in handling the fuel, and babies not yet able to walk played in the ash-bucket without restraint.

Discussion

This story illustrates the importance of remembering the possibility of lead poisoning in a patient with either neurological signs or anæmia which cannot otherwise be explained.

The delay in establishing the diagnosis in this outbreak was undoubtedly in large part due to the fact that the early cases were seen by different family doctors and were admitted to different hospitals, with the result that the connection between the cases was not detected.

This outbreak is the first of any magnitude due to scrap batteries to be recorded in this country; but 2 cases were reported by Gartside (1948) in a family using an independent stove in a disused Air Force hut (a baby aged 16 months was severely ill with encephalopathy).

The classic account is that of Williams et al. (1933), from Baltimore, of 20 Negro families living in abject poverty during the great depression. There, similarly, scrap batteries were available at nominal cost from two junk shops, which between them dismantled 2500 batteries weekly. 3 mothers and 40 children were affected. 5 showed encephalitis, the 1st case presenting like ours as suspect tuberculous meningitis with convulsions and stupor. 25 cases showed radiographic bone changes, 23 showed stippling of red blood-cells. 30 showed a lead line in the gums—other workers say this is seldom seen in young children (McKhann and Karpinski 1948).

Although pica has been regarded as the commonest cause of lead poisoning in this country (Burrows et al. 1951) it is not the only cause, and the possibility should always be borne in mind of further cases arising in the way we have described either in endemic or epidemic form.

The response to treatment in the present cases was satisfactory, and some months later all the children were physically normal. Whether there will be any residual damage it is as yet too early to say. Henderson (1954) has examined the cause of death of 165 children who had lead poisoning in 1915–35 in Queensland, Australia. He found that 94 of these patients died of chronic nephritis five to thirty-five years later, the greatest number of deaths being fifteen to twenty years after the episode of plumbism.

The prognosis regarding mentality is unfavourable. It cannot be presumed, even in the absence of gross encephalopathy, that young children's mental development will be spared (Byers and Lord 1943, Gibb and MacMahon 1955). Vogt (1932) described a ventriculogram showing internal hydrocephalus at the age of 4 years as the sequel of severe lead encephalitis at the age of 2 years. The intelligence-quotient in those of our patients who were severely affected was low, but we have no record of their intelligence before they developed lead poisoning, and their family background suggests caution in interpreting these initial results. Irreparable damage may already have been done in some cases before treatment was begun. The medical officer of health is undertaking a long range study of the mental development of all the affected children.

Summary

An outbreak of lead poisoning due to the use of scrap batteries as domestic fuel is reported.

10 children belonging to 5 different families were severely affected, and 2 died before the correct diagnosis had been made.

50 other children showed signs of absorption of lead.

The limitations of the diagnostic value of stippled red blood-cells and of lead deposits in bone radiographs are discussed.

Specific detoxication with intravenous calcium E.D.T.A. was used in 5 surviving cases of encephalopathy and considerably increased the output of lead in the urine.

In eleven months' follow-up of 58 cases of lead absorption or poisoning no acute toxic episodes occurred.

It is a pleasure to record our thanks to Dr. T. Colver, under whom one of the cases was admitted; Dr. Gillet, who, as medical officer of health for Rotherham, investigated the outbreak; Mr. N. S. Robson, H.M. coroner for Rotherham, for permission to describe the findings in the fatal cases; Dr. Forbes and Dr. Auchinachie for details of necropsies; Dr. J. E. Kench, of the department of occupational health, University of Manchester, for estimating the urinary lead; Dr. J. L. Emery and Miss E. Finch, M.SC., for biochemical estimations; Dr. J. Wilkie, Dr. N. A. Lewtas, and Dr. T. Lodge, for radiographs and advice; Mr. L. B. Birch, M.A., of the Institute of Education, University of Sheffield, for the intelligence testing of hospital cases; Dr. J. D. Sheward, registrar, and Dr. L. H. Mofflin, Dr. R. D. Haigh, and Sister L. Sharclow for help with ward cases; the hospital radiographers and laboratory technicians for very many survey films and blood-counts; and especially Professor Illingworth for advice and criticism.

REFERENCES

Aub, J. C., Fairhall, L. T., Minot, A. S., Reznikoff, P. (1925) *Medicine, Baltimore*, **4**, 1.
Burrows, N. F. E., Rendle-Short, J., Hanna, D. (1951) *Brit. med. J.* i, 329.
Byers, R. K., Lord, E. E. (1943) *Amer. J. Dis. Child.* **66**, 471.
Caffey, J. (1931) *Radiology*, **17**, 957.
Chisolm, J. J. (1955) Report of combined meeting of Pædiatric Societies, Quebec City. June, p. 15.
Gartside, V. O. B. (1948) *Med. Offr.* **80**, 241.
Gibb, J. W. G., MacMahon, J. F. (1955) *Brit. med. J.* i, 320.
Gillet, J. A. (1955) *Lancet*, i, 1118.
Gradwohl, R. B. H., Kouri, P. (1948) Clinical Laboratory Methods and Diagnosis. 4th ed., London.
Henderson, D. A. (1954) *Aust. Ann. Med.* **3**, 219.
McKhann, C. F., Karpinski, F. E. (1948) *In* Brenneman's Practice of Pediatrics. Hagerstown, Maryland; vol. 1, chap. 18.
Marsden, H. B., Wilson, V. K. (1955) *Brit. med. J.* i, 324.
Vogt, E. C. (1932) *J. Amer. med. Ass.* **98**, 125.
Williams, H., Schulze, W. H., Rothchild, H. B., Brown, A. S., Smith, F. R. jun. (1933) *Ibid*, **100**, 1485.
Wintrobe, M. M. (1946) Clinical Hematology. Philadelphia.

PATHOGENESIS OF ENDOCARDIAL FIBRO-ELASTOSIS

W. J. S. STILL
M.B. Aberd.
DEMONSTRATOR IN PATHOLOGY, ROYAL VICTORIA INFIRMARY, NEWCASTLE UPON TYNE

E. H. BOULT
B.Sc. Lond.
RESEARCH ASSISTANT, DEPARTMENT OF CHEMISTRY, KING'S COLLEGE, NEWCASTLE UPON TYNE

ALTHOUGH congenital endocardial fibro-elastosis has been extensively investigated, its ætiology and pathogenesis remain obscure. Craig (1949), Gowing (1953), Rosahn (1955), and others have described its pathology: the disease, usually established at birth, is characterised by diffuse thickening of the endocardium, which is sometimes ten times as thick as healthy endocardium, chiefly in the left ventricle and involving the valves in about half the cases. Cardiac hypertrophy is invariably present, and most infants die from cardiac failure in the first year of life.

In the pathogenesis of the thickening three possible processes have to be considered: (1) simple overgrowth of the fibrous and elastic tissue of the endocardium; (2) primary necrosis of the subendocardial layers of the myocardium, followed by replacement fibrosis; and (3) deposition of fibrin or other coagulum from the blood on the endocardial surface and subsequent incorporation of it into the endocardium. Duguid (1946, 1949) has shown that fibrin deposits on the intimal surface of the aorta and coronary arteries lead to fibrous thickening of the intima of these vessels, and Magarey (1949) has shown that the same process causes thickening of the valves in chronic rheumatic endocarditis. Levene (1955) has produced by electron-microscopy striking confirmation of these findings in the aorta. Consequently it was decided to apply the same method of investigation to the problem of congenital endocardial fibro-elastosis.

Materials and Methods

Six cases of uncomplicated endocardial fibro-elastosis were examined in babies aged 6–9 months. The surface of the left ventricle was washed and the endocardium from various parts peeled off in superficial and deep layers. Samples from both layers were teased out and ground up, at a controlled temperature, to make fine suspensions in distilled water. Each suspension was divided into two parts, of which one part was digested in 2% chymotrypsin for four hours at 37°C to destroy fibrin without materially affecting collagen or elastic tissue.

All the suspensions were stained with 0·1% phosphotungstic acid to simplify electron-microscopy and washed in distilled water. A drop of each suspension was deposited on four copper grids previously covered with 'Formvar' membranes, and air-dried. The preparations were shadowed with gold-palladium at an angle of 2 : 1 (Williams and Wykcoff 1945), and all the grids were scanned at × 2000, selected fibres being photographed at × 10,700.

Electron-microscopic Structure of Connective Tissue

Collagen, the chief component of fibrous tissue, has an electron-microscopic structure consisting of fibres 300–900 Å wide having a constant axial periodicity of 640 Å (1 μ = 10,000 Å). An example taken from a tendo Achillis is shown in fig. 1. The structure of elastic tissue is less well defined, and special techniques, not used in the present investigation, are required for its study. On ordinary electron-microscopy thick bands of tissue without any fibrillary structure or axial periodicity are seen (Hall et al. 1955). An example from a human aorta is shown in fig. 2.

Fig. 2—Elastic tissue from aorta. (Shadowed with gold-palladium. × 67,800.)

The electron-microscopic structure of fibrin has been defined by Hawn and Porter (1947) and Hall (1949). Fibrin obtained from plasma-clot shows an axial periodicity of 230 Å and a fibre width of about 100 Å (fig. 3), and the same structure is seen in a naturally occurring blood-clot from the left auricle (fig. 4).

Results

Material from superficial layers was found to consist of fibres 100 Å wide and with an axial periodicity of about 230 Å (fig. 5). These were often found in narrow folded sheets, of which some formed interlacing patterns. They appeared to be morphologically indistinguishable from the structures shown in figs. 3 and 4.

The deep layers showed the same fibres but in much smaller amounts. The predominating fibres were those

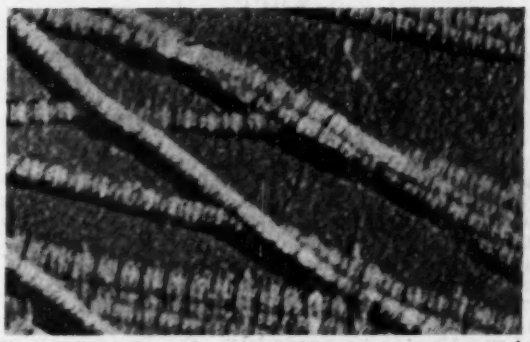


Fig. 1—Collagen fibres from tendo Achillis: axial periodicity 640 Å. (Shadowed with gold-palladium. × 67,800.)

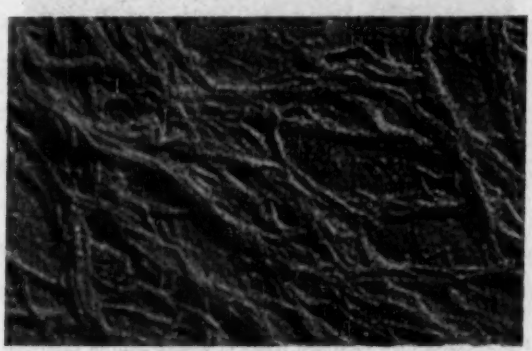


Fig. 3—Human fibrin: axial periodicity 230 Å; fibre width about 100 Å. (Shadowed with gold-palladium. × 67,800.)

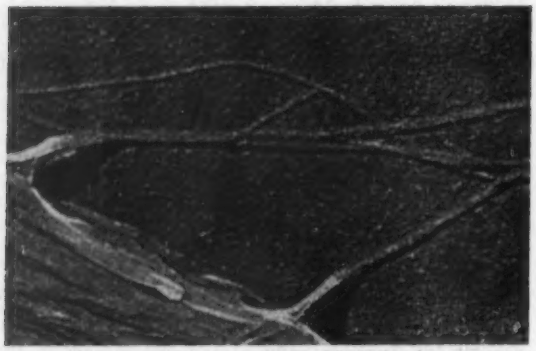


Fig. 4—Fibrin from blood-clot: axial periodicity 230 Å; fibre width about 100 Å. (Shadowed with gold-palladium. × 67,800.)

800 Å in width with an axial periodicity of 640 Å, corresponding to that of collagen (fig. 6). These were seen singly or in thick bundles in which each fibre could be clearly distinguished. In both layers material with the structure of elastic tissue was found which did not seem to differ in appearance from the elastic tissue of the aorta.

In the trypsinised specimens it was found that the 230 Å fibres had been largely destroyed, whereas the collagen and elastic fibres remained unchanged. This indicated that the 230 Å fibres were like fibrin not only in appearance but also in their sensitivity to trypsin.

Discussion

The electron-microscopic structure of the predominating fibres in the surface layers of the fibro-elastotic endocardium are, so far as one can say, indistinguishable from fibrin, which seems to suggest that they are derived from blood by the incorporation of fibrin deposits. Nevertheless ordinary histological investigation does not reveal evidence of the deposition of fibrin on the endocardium; but there may be two reasons for this: (1) the fibrin may have been deposited in utero, as suggested by the condition in premature stillborn infants; and (2) possibly the fibrin is deposited in very thin films and immediately incorporated in the endocardium, thus becoming no longer recognisable as fibrin. In arterial atherosclerosis such a process is often found.

It is not implied that the incorporation of fibrin accounts for the whole process of endocardial thickening in congenital endocardial fibro-elastosis. Muscle necrosis with replacement fibrosis at the myo-endocardial junction seems to indicate that some process there is also concerned.

Fig. 5—Fibres from superficial layers of endocardium in congenital fibro-elastosis are indistinguishable from fibrin (see figs. 3 and 4). (Shadowed with gold-palladium. × 67,800.)

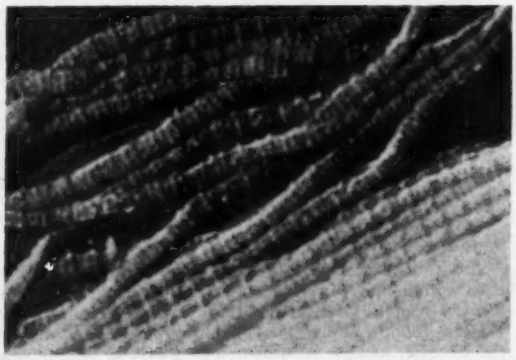


Fig. 6—Collagen fibres from deeper layers of endocardium in congenital fibro-elastosis (cf. fig. 1). (Shadowed with gold-palladium. × 67,800.)

Summary

Six cases of congenital endocardial fibro-elastosis were examined by electron-microscopy.

The surface layers of the endocardium were composed almost solely of fibres morphologically indistinguishable from fibrin.

The incorporation of fibrin is an important factor in the thickening of the endocardium in congenital endocardial fibro-elastosis.

We wish to thank Prof. J. B. Duguid for advice and criticism.

REFERENCES

Craig, J. M. (1949) *Bull. int. Ass. med. Mus.* **30**, 15.
Duguid, J. B. (1946) *J. Path. Bact.* **58**, 207.
— (1949) *Lancet*, ii, 925.
Gowing, N. F. C. (1953) *J. Path. Bact.* **65**, 13.
Hall, C. E. (1949) *J. biol. Chem.* **179**, 857.
Hall, D. A., Reed, R., Tunbridge, R. E. (1955) *Exp. Cell. Res.* **8**, 35.
Hawn, G. V. Z., Porter, K. R. (1947) *J. exp. Med.* **86**, 285.
Levene, C. I. (1955) *Lancet* ii, 1216.
Magarey, F. R. (1949) *J. Path. Bact.* **61**, 203.
Rosahn, P. D. (1955) *Bull. N.Y. Acad. Med.* **31**, 453.
Williams, R. C., Wyckoff, R. M. G. (1945) *Proc. Soc. exp. Biol., N.Y.* **58**, 265.

COLOUR-BLINDNESS IN "OVARIAN AGENESIS" (GONADAL DYSPLASIA)

PAUL E. POLANI
M.D. Pisa, M.R.C.P.
LATE ASSISTANT TO THE DIRECTOR OF THE DEPARTMENT OF CHILD HEALTH

M. H. LESSOF
M.R.C.P.
REGISTRAR, ENDOCRINE DEPARTMENT

P. M. F. BISHOP
D.M. Oxfd, M.R.C.P.
ENDOCRINOLOGIST

GUY'S HOSPITAL, LONDON

IN contrast with their feminine appearance, a large proportion of patients with so-called ovarian agenesis (gonadal dysplasia) do not have a female pattern of nuclear chromatin in skin cells and leucocytes, and in this respect they resemble males. This finding has an application and an implication. The application is practical and is related to diagnosis both after and especially before puberty. The implication is biological because the inference is that the affected persons, though phenotypic females (with lack of secondary sexual characters after puberty), are genetic males. Thus the

conclusions reached from embryonic castration of laboratory animals would be extended to experiments of Nature in man, and early embryonic gonadal destruction would account for genetic males becoming feminised during early development.

In man, the validity of this assumption rests on the identity between nuclear-chromatin status—the presence or absence of "sex chromatin" (Barr 1954)—and genetic sex. The evidence for this identity has been reviewed by Barr (1955) and Lennox (1956) and, though suggestive, is not conclusive, as both these writers are careful to stress. Even if this identity were proved in normal subjects, caution would be necessary in extrapolating to abnormal individuals in whom there is the possibility of abnormality of chromosomes.

There are two ways in which further insight into the hypothesis of the genetic maleness of phenotypic females with "ovarian agenesis" could be gained:

1. Identifying the pair of sex chromosomes in dividing cells from tissue-cultures of skin or bone-marrow (Hsu et al. 1953) or blood (Chrustschoff and Berlin 1935).

2. Showing that individuals with ovarian agenesis and "male chromosomal sex" are carriers of genetically determined characters found more commonly in males.

The first method is not easy in execution and interpretation. Dr. G. A. Thomas, senior lecturer in anatomy at Guy's Hospital Medical School, studied three patients for us but he was unable to diagnose the sex of the cells in mitosis.

As for the second method, sex-linked recessive conditions determined by genes carried on the non-homologous segment of the X-chromosome, like hæmophilia, could be used for our purpose but are too rare to be used statistically to demonstrate genetic maleness in a necessarily limited sample of cases of "ovarian agenesis." In discussing this with Prof. L. S. Penrose he pointed out that congenital red-green colour-blindness is sufficiently common to be detectable in a relatively small sample. This defect is determined by faulty gene(s) carried on the non-homologous segment of the X-chromosome. Accordingly it manifests itself fully in males when they have the abnormal gene on the X-chromosome and in females, with proportionately lesser frequency, when both X-chromosomes are involved—i.e., in the homozygous state. Therefore major red-green defects, as determined by the Ishihara test, are found in about 7–8% of males but in not more than about 0·6% of females (Vernon and Straker 1943, Brown quoted by Pickford 1951a, b, and c).

Material, Methods, and Results

By means of the Ishihara tables we tested twenty-five patients, all of apparent feminine sex, who could clinically, and with the aid of laboratory methods, be considered to have either "pure ovarian agenesis" or "Turner's syndrome"—i.e., ovarian agenesis with webbing of the neck, frequently cubitus valgus, and other variably associated malformations. Although the two conditions merge clinically into each other, in the absence of knowledge as to ætiology we tried to keep the two groups of cases separate. The "nuclear sex" of these patients was determined on skin and leucocytes in ten instances, only on skin in six instances, and only on leucocytes in eight. In the remaining patient no assessment was made. Twenty of the patients had chromatin-negative nuclei (genetic males by inference) and four had chromatin-positive nuclei (genetic females by inference).

We used the tables from the 9th edition of Ishihara's *Tests for Colour Blindness* (1949) with the precautions recommended by Ishihara (1949) and Cavanagh (1955). Three patients giving the typical responses for red-green colour-blindness, as indicated by Ishihara (1949), were considered defective; they gave 18, 19, and 23 abnormal responses out of a possible total of 24. A fourth patient, whom we did not have an opportunity of testing, is included as an abnormal. The ophthalmic surgeon who tested this patient thought the result was typical of congenital red-green colour-blindness. The other patients made less than 4 errors with the exception of one who made 5, two who made 6, and one who made 8. These were all considered normal and their mistakes consisted in misreading a digit or reading the "hidden" patterns, errors which are relatively common among normals. The results are shown in table I. Disregarding the chromatin status, four out of a total of twenty-five patients were colour-blind.

TABLE I—RESULTS OF ISHIHARA COLOUR-VISION TESTS IN FEMALES WITH TURNER'S SYNDROME AND "PURE OVARIAN AGENESIS"

Condition	No. of patients	Chromatin-negative	Colour-vision		Chromatin-positive	Colour-vision		Chromatin ?	Colour-vision	
			Normal	Colour-blind		Normal	Colour-blind		Normal	Colour-blind
Turner's syndrome ..	11	10	7	3	1	1	..	..	..	..
Probable Turner syndrome	2	..	..	..	2	2	..	..	..	..
Pure ovarian agenesis ..	12	10	9	1	1	1	..	1	1	..
Total ..	25	20	16	4	4	4	..	1	1	..

The results differ significantly from those to be expected from testing a sample of females but not from those to be expected in a sample of males (table II). So that, if we had no information about the sex of our patients, we should conclude that we have tested a sample of males. Acceptance of this statement lends support to the hypothesis of the genetic maleness of patients with "ovarian agenesis." It also suggests that "sexing" of nuclei reveals the genetic sex in this group of patients and helps to strengthen the case for the identity between nuclear chromatin status and genetic sex.

Other explanations for our results are possible. One, for instance, is that we may be dealing with persons who have an XO pattern of sex-chromosomes. Whether such a condition is possible in man is unknown, nor is it known what its effect might be on sex-differentiation or on the chromatin status of the nuclei of somatic cells. No doubt other speculations may fit the facts. More evidence is required to help one way or another, and to this end we propose to study in detail the type of colour defect shown by our present and additional patients. We are extending the investigation to the families of our patients and are trying to increase our observations on the colour-vision of patients with "ovarian agenesis" and chromatin-positive nuclei.

We should like to suggest that this technique be applied to groups of patients in whom there appears to be a

TABLE II—EXPECTED AND OBSERVED RESULTS FROM TESTING WITH ISHIHARA TABLES A SAMPLE OF 25 PATIENTS * WITH "OVARIAN AGENESIS"

—	Normal colour-vision	Colour-blind	Total
Expected results in sample of females	24·85	0·15	25·00
Expected results in sample of males	23·00	2·00	25·00
Observed results	21	4	25

* Based on an incidence of colour-blindness of 8% among males and 0·6% among females.

discrepancy between apparent and genetic sex, supported by the findings of discordant nuclear sex. We feel that this may be useful particularly in those cases where the gonads are absent or sterile and where, therefore, identification of the sex chromosomes of germ-cells (spermatocytes) in meiosis (Severinghaus 1942) is impossible.

Summary

In an effort to test further the hypothesis of the genetic maleness of patients with "ovarian agenesis," the colour-vision of twenty-five such cases was studied by the Ishihara tests. The finding of four colour-blind subjects among them lends support to the above hypothesis.

We are grateful to Professor Penrose, F.R.S., for his advice and criticism. We wish to thank Sir Russell Brock for permission to see one case, Prof. R. W. B. Ellis for details of one case, Dr. P. R. Evans for permission to see three cases, Dr. R. C. Mac Keith for permission to see one case, Prof. R. Platt for details of three cases, and the many other colleagues who referred their patients to one of us (P. M. F. B.).

We are indebted to Prof. M. L. Barr and Dr. B. Lennox for reporting on the skin biopsies, to Mr. P. Gardiner for help with the colour-vision tests, and to Dr. Thomas for carrying out cultures on three patients.

REFERENCES

Barr, M. L. (1954) *Surg. Gynec. Obstet.* **99**, 184.
— (1955) *In* Modern Trends in Obstetrics and Gynæcology, edited by K. Bowes. London; 2nd ser. p. 117.
— (1956) *Lancet*, **1**, 47.
Cavanagh, P. (1955) *Occup. Psychol.* **29**, 43.
Chrustschoff, C. T., Berlin, E. A. (1935) *J. Genet.* **31**, 243.
Hsu, T. C., Hooks, C. A., Pomerat, C. M. (1953) *Texas Rep. Biol. Med.* **11**, 585.
Ishihara, S. (1949) Tests for Colour Blindness. London.
Lennox, B. (1956) *Scot. med. J.* **1**, 97.
Pickford, R. W. (1951a) Individual Differences in Colour Vision. London; p. 32.
— (1951b) *Ibid*, p. 290.
— (1951c) *Ibid*, p. 330.
Severinghaus, A. E. (1942) *Amer. J. Anat.* **70**, 73.
Vernon, P. E., Straker, A. (1943) *Nature, Lond.* **152**, 690.

OVARIAN AGENESIS WITH MALE SKIN SEX

EVIDENCE AGAINST PARTHENOGENESIS

ROBERT PLATT
M.D. Sheff., M.Sc. Manc., F.R.C.P.
PROFESSOR OF MEDICINE, MANCHESTER UNIVERSITY

F. STRATTON
M.D. Manc., D.P.H.
DIRECTOR, REGIONAL BLOOD TRANSFUSION SERVICE; SPECIAL LECTURER IN HUMAN SEROLOGY, MANCHESTER UNIVERSITY

From the Department of Medicine, Manchester University

PARTHENOGENESIS is known to be possible in the mammal, fatherless rabbits having been experimentally produced (Pincus 1939, Pincus and Shapiro 1940). It is not inherently impossible in man. If it occurred, the individuals produced would probably be haploid in their nuclear structure, having only a single set of chromosomes, including of course only a single X chromosome. Thus they would be female in apparent sex. Such individuals should be identifiable by two tests (Spurway 1955): they would have no blood-groups which could not have been derived solely from their mother, and a skin-graft from daughter to mother should survive.

It occurred to one of us that it was just within the bounds of possibility that human cases of ovarian agenesis might be of this nature. These are rather stunted females who have no ovarian (or testicular) tissue and fail to show secondary sex characteristics at the age of puberty. Some of them show the developmental abnormalities known as Turner's syndrome. It has been found that skin biopsies from these cases usually show the male type of nucleus (Polani, Hunter, and Lennox 1954). Because the male and female nuclei from skin and leucocytes can usually be distinguished in normal individuals, it has been assumed that the male appearance is determined by the presence of the XY pair of chromosomes and the female by XX. This, however, is an unproved assumption, and we thought it possible that the male type resulted not from the presence of a Y chromosome but from the possession of only one X chromosome. If so, a haploid nucleus (X) would give the male appearance. Thus cases of ovarian agenesis might be haploid parthenogenetic females. To put this to the test, blood-grouping alone should be capable in most instances of providing absolute evidence against parthenogenesis. Only if it failed to do so would skin-grafting be worth while (if the patients and their mothers were willing). A haploid individual could have no heterozygous blood-groups such as AB or MN, and a parthenogenetic individual, whether haploid or diploid, could have no heterozygous groups and no groups not derived from her mother.

RESULTS OF TESTING ERYTHROCYTES OF THE PATIENTS MISSES A, B, AND C AND TWO OF THEIR MOTHERS WITH BLOOD-GROUPING SERA

Antisera	Reactions with erythrocytes				
	Mrs. A	Miss A	Mrs. B	Miss B	Miss C
Anti-A	+	+	−	−	−
Anti-A_1	+	+	−	−	−
Anti-B	−	−	−	−	−
Anti-A + B	+	+	−	−	−
Anti-D	+	+	+	+	+
Anti-C	+	+	+	+	+
Anti-C^w	−	−	−	−	−
Anti-C^x	−	−	−	−	−
Anti-E	−	−	−	−	+
Anti-c	+	+	+	+	+
Anti-e	+	+	+	+	+
Anti-M	+	−	+	+	+
Anti-N	+	+	−	−	+
Anti-S	+	+	−	−	+
Anti-P	+	+	−	−	+
Anti-Le^a	−	−	−	−	−
Anti-Le^b	+	−	+	+	+
Anti-Lu^a	−	−	−	−	−
Anti-K	−	−	−	−	−
Anti-k	+	+	+	+	+
Anti-Fy^a	−	+	+	+	+
Anti-Jk^a	+	+	−	−	+

Five cases of ovarian agenesis with male skin sex are known to this department, but for various reasons only three of them are readily accessible. As it is important that they should not be identified, we shall call them A, B, and C; and as they are socially female we shall refer to them in the feminine gender. Note that blood-groups have often been used in forensic medicine to decide between two putative fathers. We were concerned with the simpler decision as to whether these young women had a father at all.

The reactions obtained when the erythrocytes of these patients and (in two cases) their mothers, were tested with various blood-grouping sera, are recorded in the accompanying table. It will be seen that Miss A is heterozygous in the Rh blood-group, being of genotype Cc. She is Fy(a+), whereas her mother is Fy(a−). The Fy^a gene is therefore not derived from her mother. Miss B is also heterozygous in the same respect in her Rh group, and the reactions of her erythrocytes and those of her mother are identical. We presume that this is no more than fortuitous, for the possession of Cc seems to rule out parthenogenesis.

Miss C (whose parents are no longer living) is also heterozygous in the Rh group, being Cc Ee as well as being heterozygous MN. Dosage studies performed to determine the presence of a single or double dose of blood-group antigen were considered unsuitable for use as a means of proving or disproving the haploid state. We conclude that these blood-group findings disprove the hypothesis we set out to examine.

In passing it may be mentioned that our patients were white and, so far as is known, of white ancestry. In none of the five cases is there evidence that they arose from twin births. Thus any possibility that the syndrome is caused by some mechanism akin to that which causes the freemartin phenomenon in cattle seems unlikely.

Conclusions

Reasons are given for entertaining the remote possibility that cases of ovarian agenesis with "male" skin sex may be haploid individuals arising from parthenogenesis. Blood-grouping in three such patients showed that they were not.

We are indebted to Dr. P. E. Polani and to Dr. J. Shafar who have coöperated in the diagnosis and investigation of our patients.

REFERENCES

Pincus, G. (1939) *J. exp. Zool.* **82**, 85.
— Shapiro, H. (1940) *Proc. nat. Acad. Sci., Wash.* **26**, 163.
Polani, P. E., Hunter, W. F., Lennox, B. (1954) *Lancet*, ii, 120.
Spurway, H. (1955) See *Ibid*, ii, 967.

FAT ABSORPTION IN CHRONIC SEVERE MALNUTRITION IN CHILDREN

FEDERICO GÓMEZ
M.D.
PROFESSOR OF PÆDIATRICS, POSTGRADUATE MEDICAL SCHOOL
DIRECTOR OF THE HOSPITAL INFANTIL OF MEXICO

RAFAEL RAMOS GALVÁN
M.D.
LECTURER IN PÆDIATRICS, POSTGRADUATE MEDICAL SCHOOL

JOAQUÍN CRAVIOTO
M.D., M.P.H.
LECTURER IN PÆDIATRICS; ASSOCIATE PROFESSOR OF BIOCHEMISTRY, ARMY MEDICAL SCHOOL OF MEXICO

SILVESTRE FRENK
M.D.
LECTURER IN PÆDIATRICS, POSTGRADUATE MEDICAL SCHOOL
UNIVERSIDAD NACIONAL DE MEXICO

JUDITH VÁZQUEZ SANTAELLA
M.D., M.Sc.

CARMEN DE LA PEÑA
HEAD CHEMIST, LABORATORY FOR RESEARCH ON MALNUTRITION, HOSPITAL INFANTIL, MEXICO

From the Group for Research on Infantile Malnutrition, Hospital Infantil, Mexico City

IN view of the clinical variations and biochemical alterations in dietary malnutrition in children (Gómez et al. 1954a and b) more data about the utilisation of food are needed to show whether there is impairment of digestion, absorption, or retention of nutrients. For this purpose, we have been engaged since March, 1953, in coöperation with the children's department of the Bellevue Hospital of New York, in research on fat balance, nitrogen balance, urinary excretion of vitamin-B complex, tryptophane load tests, and amino-aciduria. A preliminary report on amino-aciduria has already been published by the group in New York (Cheung et al. 1955).

Primary malnutrition (kwashiorkor, shibi-gachaki, mehlnährschaden, síndrome pluricarencial infantil, infantile atrophy, &c.) is characterised, among other abnormalities, by low or absent enzymatic activity of the duodenal contents (Carvalho et al. 1947, Thompson and Trowell 1952, Gómez et al. 1954a). This fact, together with the clinical impression that malnourished children develop steatorrhœa when fed moderate amounts of fat, has led the clinicians to prescribe a low-fat diet especially during the early stages of recovery.

In cystic fibrosis of the pancreas steatorrhœa is caused by a defect of digestion due to lack of enzymatic activity in the duodenal contents. Chung et al. (1951) reported that in both cystic fibrosis of the pancreas and cœliac disease, fat absorption remains proportional to fat intake, although the proportion of intake absorbed is low and practically constant.

There is no theoretical reason why, in steatorrhœa of malnutrition (whether due to faulty digestion, faulty absorption, or both), a larger intake of fat should not lead to a better net absorption of fat. Although it is possible to meet the calorie requirements of an individual with a low-fat diet, the well-recognised non-caloric functions of fats—e.g., the supply of essential fatty acids, their protein-sparing action, their rôle in immunity, and their action on the maturation of epiphyses—in a low-fat diet are not taken into account. Therefore it seemed necessary to study the absorption of fat by malnourished children before accepting the long-established practice of prescribing a diet very poor in fat for them.

FAT ABSORPTION IN MALNUTRITION

Case no.	Period	Fat intake (g.)	Faecal fat (g.)	Fat absorbed	
				Amount (g.)	Proportion of intake (%)
1	Admission	19·724	4·970	14·750	75
	2nd week	55·650	11·995	43·655	78
	Recovery	105·600	21·270	84·330	84
2	Admission	27·300	10·492	61·810	61
	Recovery	127·657	25·617	102·040	80
3	Admission	26·814	13·100	13·714	51
	2nd week	31·090	14·581	16·509	53
	Recovery	96·570	18·919	77·651	80
4	Admission	29·357	14·798	14·559	50
	2nd week	50·170	13·422	36·748	73
	Recovery	141·975	16·982	124·993	88
5	Admission	31·320	12·193	17·127	55
	2nd week	71·180	15·420	55·760	73
	Recovery	134·527	17·301	117·226	87
6	Admission	19·296	23·528	−4·232	−22
	2nd week	62·745	24·451	38·294	61
	Recovery	99·456	24·468	75·038	76
7	Admission	18·760	7·765	10·895	58
	2nd week	63·013	10·501	52·511	83
	Recovery	72·520	13·920	58·600	82
8	Admission	56·840	22·338	34·500	60
	Recovery	73·810	14·720	59·090	79
9	Admission	43·430	15·880	27·550	64
	2nd week	67·700	17·938	49·762	74
	Recovery	86·630	28·430	58·200	76
10	Admission	27·430	15·640	11·790	43
	2nd week	62·010	27·470	34·740	56
	Recovery	107·140	31·570	75·570	71
11	Admission	26·120	19·590	6·530	25
	2nd week	37·320	13·470	23·850	64
	Recovery	108·290	17·920	90·370	83
12	Admission	70·720	21·380	49·340	70
	2nd week	111·600	28·700	82·900	74
	Recovery	112·020	25·470	86·550	77
13	Admission	82·840	42·879	39·970	48
	Recovery	148·600	40·213	108·390	72
14	Admission	40·320	29·224	11·100	28
	Recovery	83·520	15·110	68·410	82

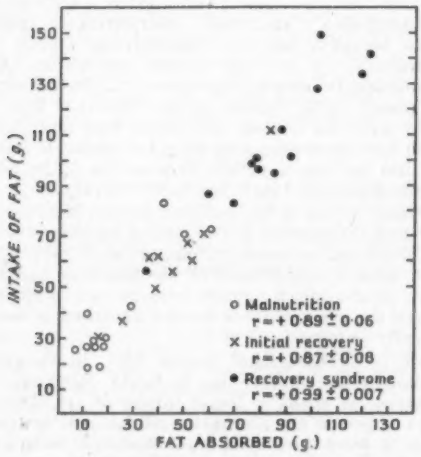


Fig. 1—Relation of intake of fat to absorption of fat in chronic severe malnutrition.

Experimental Methods

The material consisted of 14 children all showing the main signs and symptoms of severe chronic malnutrition (Trowell et al. 1954, Cheung et al. 1955).

Four-day metabolic periods were studied, stools being marked with carmine. Patients were placed on metabolism beds to permit separate collections of urine and fæces. The analytic method followed was that of Tidwell and Holt (1936). Two metabolic periods were studied in each case: one on admission to the ward, and the other when the child was convalescing well, and showing the nutritional recovery syndrome (Gómez et al. 1952). In 10 cases an additional period was studied after a week's treatment in hospital.

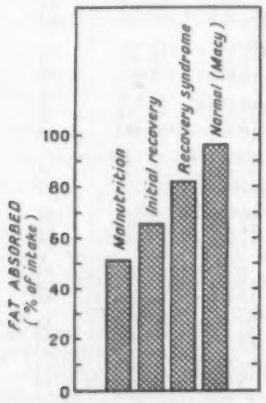


Fig. 2—Absorption of fat in chronic severe malnutrition.

Although a variable proportion of fæcal fat may represent excretion rather than absorption of fat, for the sake of simplicity and for the purpose of the present paper intake minus fæcal fat has been termed "absorption."

The accompanying table shows that the absorption of fat is abnormal in malnutrition in infants and that, although only a few children have macroscopic steatorrhœa, there is nevertheless a chemical steatorrhœa on admission which in many cases is severe, since only about half the intake of fat is absorbed. This chemical steatorrhœa disappears with treatment, about 80% of the intake of fat being absorbed during recovery (fig. 1).

If one considers not the percentage but the amount of fat absorbed, it is clear that larger intakes are associated with better absorption; this holds true for both malnutrition and recovery. The respective coefficients of correlation (r) for malnutrition on admission, in the second week of treatment, and on full recovery are + 0·89, + 0·87, and + 0·99, with a standard error of 0·06, 0·08, and 0·007 respectively (fig. 2).

Comments

Our findings show that the absorption of fat by malnourished children with or without macroscopic steatorrhœa is deficient. This defect is reversible: after about six weeks' dietary treatment the percentage of fat absorbed becomes almost normal. Even during the stage of severe malnutrition there is a very good correlation between the intake and the absorption of fat; thus an increased amount of fat in the diet leads to a correspondingly larger net absorption of fat.

Moderately severe steatorrhœa has been reported from Uganda by Trowell et al. (1954), who published the fat balances of 3 cases: 2 were studied during the acute phase, diminished absorption of fat being found in both patients; a second metabolic period was studied in 1 child during recovery, and the data showed improved absorption; and the 3rd child showed, on recovery, normal absorption of fat. We are not aware of other reports of fat balance in children with chronic severe malnutrition and during recovery, but the analysis of fæcal fat has been reported in several instances. It is important that Jayasekera et al. (1951) could not find any correlation between the percentage of fæcal fat and the severity of malnutrition, a fact that is corroborated by our present findings.

Morales et al. (1950) and Chung et al. (1951) found a very good correlation between intake and absorption of fat in premature infants, in cystic fibrosis of the pancreas, in cœliac disease, and in acute diarrhœa. In this respect it is worth remembering that the cases of diarrhœa studied by Chung (1948) did not show any "washing out" of other nutrients; the fear of losing other nutrients, especially some minerals, by increasing the intake of food-stuffs in general, and of fat in particular, does not seem to be justified.

If one remembers that children with primary chronic malnutrition have subsisted on a diet poor in practically all nutrients, and that fats, besides being still the best source of calories, have many non-caloric functions, it seems useful to insist that the long-established practice of either reducing or suppressing the intake of fat in steatorrhœa, particularly in malnourished children, seems to be unnecessary and might even be undesirable.

Summary

The fat balance was studied, in 14 children affected with chronic severe malnutrition, on admission to the hospital and at subsequent stages of recovery. Compared with healthy children the patients studied on admission showed a significantly lower fat absorption, which improved on recovery.

A highly significant positive correlation was found between absolute values of intake and absorption of fat.

The importance of these findings, related to dietary treatment of infantile malnutrition, is discussed.

REFERENCES

Carvalho, M., Schmidt, M. M., Pinto, A. G. (1947) *J. Pediat. Rio de J.* **13**, 141.
Cheung, W. M., Fowler, D. I., Norton, P. M., Snyderman, S. E., Holt, L. E. jun. (1955) *J. trop. Pediat.* **1**, 141.
Chung, A. W. (1948) *J. Pediat.* **33**, 1.
— Morales, S., Snyderman, S., Lewis, J. M., Holt, L. E. jun. (1951) *Pediat.* **7**, 491.
Gómez, F., Ramos Galván, R., Cravioto Munoz, J. (1952) *Pediatrics, N.Y.* **10**, 513.
— — — Frenk, S. (1954a) *Ibid*, **13**, 544.
— — — — (1954b) *Acta pædiat., Stockh.* **43**, 336 (suppl. 100).
— — — — (1955) *Advanc. Pediat.* **7**, 131.
Jayasekera, H. T. W., de Mel, B. V., Collumbine, H (1951) Cited by Trowell et al. (1954).
Morales, S., Chung, A. W., Lewis, J. M., Messina, A., Holt, L. E. jun. (1950) *Pediatrics, N.Y.* **6**, 86.
Thompson, M. D., Trowell, H. C. (1952) *Lancet*, **i**, 1031.
Tidwell, H. C., Holt, L. E. jun. (1936) *J. biol. Chem.* **112**, 605.
Trowell, H. C., Davies, J. N. P., Dean, R. F. A. (1954) Kwashiorkor. London.

Preliminary Communications

ACCELERATION OF FIBRINOLYSIS OF BLOOD-CLOTS BY DILUTION WITH SALINE AND HUMAN SERUM

Macfarlane [1] and Macfarlane and Pilling [2] noted that, when blood was diluted in physiological saline solution, the fibrinolysis of blood-clots was considerably increased. We have studied the fibrinolysis-favouring action of fresh normal human serum and of serum heated for thirty minutes at 56°C.

Our observations were made on 50 normal subjects, on 26 patients with liver cirrhosis, and 6 patients with thrombopenic purpura or pancytopenia.

Method

2 ml. of blood was withdrawn under sterile conditions, and added to 2 ml. of a mixture containing various proportions of saline solution (adjusted to pH 7·2 with Sörensen's buffers) and of normal human serum, fresh or inactivated by heating for thirty minutes at 56°C. This serum must be compatible with the blood examined, in the system ABO.

Results

Dilution of blood with an equal quantity of saline considerably favours fibrinolysis and may reveal fibrinolytic trends not previously evident. Dilution of blood with an equal quantity of fresh human serum does not favour fibrinolysis as much as dilution with saline solution; but similar dilution with inactivated serum favours fibrinolysis more than dilution with saline solution. Dilution with a mixture of saline solution and serum results in even more rapid fibrinolysis. The optimum was obtained when 2 ml. of blood was added to a mixture of 1·5 ml. of saline solution and 0·5 ml. of inactivated serum. Under these conditions the time of lysis is, on average, 2·5 times shorter than that of blood diluted with saline.

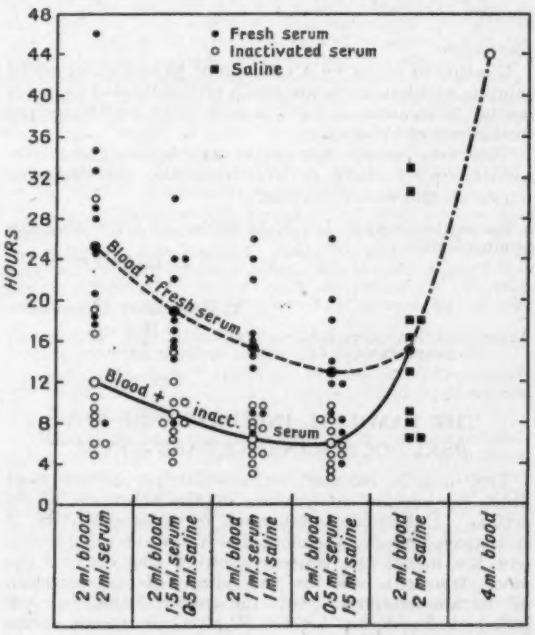
The effect of inactivated serum compared with that of fresh serum is striking. On the average, lysis is 2·2 times more rapid with inactivated serum than with fresh serum (see figure).

1. Macfarlane, R. G. *Lancet*, 1937, i, 10.
2. Macfarlane, R. G., Pilling, J. *Ibid*, 1946, ii, 562.

This method is very precise, and has enabled us to confirm the frequency of fibrinolytic activity in liver cirrhosis and to detect similar particularities in many cases of thrombopenic purpuras and pancytopenias (see table).

Discussion

It is difficult to interpret these first findings fully. But on the assumption that normal plasma contains four factors—plasminogen, antiplasmin, activating enzyme of plasminogen in plasmin (or serokinase), and an inhibitor of this serokinase—our observations can be interpreted as follows:



Dilution in saline decreases the action of antiplasmin and of the inhibitor of serokinase; they are both less active at this concentration. This effect of dilution applies both to the blood under examination and to the added normal serum.

TIME (IN HOURS) OF FIBRINOLYSIS OF BLOOD-CLOTS IN BLOOD FROM VARIOUS SOURCES SHOWING EFFECTS OF DILUTION WITH SALINE SOLUTION AND/OR FRESH OR INACTIVATED NORMAL SERUM

—		—	2 ml. blood 2 ml. serum	2 ml. blood 1·5 ml. serum 0·5 ml. saline	2 ml. blood 1 ml. serum 1 ml. saline	2 ml. blood 0·5 ml. serum 1·5 ml. saline	2 ml. blood 2 ml. saline	4 ml. blood
40 controls		F.S.	N	N	N	N	N	N
		I.S.	N	N	N	N		
Cirrhosis of liver	A	F.S.	28	22	26	26	16	N
		I.S.	10½	10	9½	8⅝		
	B	F.S.	20½	18	15	12	33	N
		I.S.	9¼	8	7	9¼		
	C	F.S.	20	15	9	7	8	N
		I.S.	6	6½	5	3¾		
	D	F.S.	33	24	13½	12	18	N
		I.S.	19	10	6	7		
	E	F.S.	8	8	7	4	6½	N
		I.S.	5	4	3	3		
	F	F.S.	46	30	22	18	22½	..
		I.S.	30	15	7	6		
	G	F.S.	17¾	14½	9	8½	13	24
		I.S.	6¼	5	4	4		
	H	F.S.	35	24	24	20	50	N
		I.S.	17	12	9½	8¼		
Thrombopenic purpuras	I	F.S.	18½	17	16½	8½	6½	N
		I.S.	8	7	5	5		
	J	F.S.	29	16	16	14	9	N
		I.S.	9	8	7½	5		

F.S. = Fresh serum. I.S. = Inactivated serum. N = None in 96 hours.

Addition of fresh serum supplies plasminogen that will be changed in plasmin by the activator present in excess in the patient's blood. However, plasmin will be partially inhibited by the antiplasmin, not fully neutralised at this particular dilution.

Addition of inactivated serum supplies thermostable plasminogen which (as we have just mentioned) will be transformed into plasmin by the activator present in the patient's blood. In this event, the action of plasmin will be complete, owing to destruction of thermolabile antiplasmin.

We regard at present this hypothesis as the most plausible one.

Conclusion

Dilution of blood by a mixture of physiological saline solution and human serum (fresh or inactivated by heating for 30 minutes at 56°C) considerably accelerates the fibrinolysis of blood-clots.

This very simple method reveals latent fibrinolytic activity, particularly in liver cirrhosis, thrombopenic purpuras, and pancytopenias.

We are indebted to Dr. A. L. Copley for translating this communication.

J. DAUSSET
M.D. Paris

Y. BERGEROT-BLONDEL
M.D. Paris

M. COLIN

Centre National de Transfusion Sanguine, Paris, XVe

THE FAMILIAL INCIDENCE OF LOW PSEUDOCHOLINESTERASE LEVEL

THE muscle relaxant suxamethonium differs from other methonium compounds in the shortness of its action. Unlike hexamethonium or decamethonium, it is destroyed by the pseudocholinesterase of the plasma, and the higher the concentration of this enzyme the more transient will be the effect of an injection of suxamethonium. On the other hand, a low pseudocholinesterase level will give rise to an undue sensitivity.

Not all instances of prolonged apnœa following suxamethonium can be explained on the basis of a low enzyme concentration.[1] This is only to be expected, and it is well known that there can be undue sensitivity to other methonium compounds which are not substrates of pseudocholinesterase.[2–4] Over the past five years we have studied examples of prolonged apnœa after suxamethonium and have seen 27 referred to us from 15 different hospitals. The pseudocholinesterase level was normal (i.e., above 55 units) in 6 (22%).

Low concentrations are usually seen when liver function is diminished, through liver damage or undernutrition. However, among the 21 patients with low cholinesterases, such an explanation applied to only 8. In the remaining 13 no pathological explanation could be found for the low enzyme concentration. We described one such case (18 units) in 1953,[5] and remarked that the brother of this patient, who was healthy, also had a low pseudocholinesterase level (8 units). Since then we have been able to examine families of 5 others. In one instance (35 units) both parents and one brother had normal pseudocholinesterase levels (66, 76, 74 units). In another (19 units) one sibling was normal (62 units), but among this sibling's five children four showed normal levels (74, 81, 70, 81 units) and one had a concentration of 45 units. In yet another case (12 units) four offspring were normal (77, 75, 55, 84 units) but of six grandchildren five were also normal (84, 86, 106, 65, 83 units) and one showed a level of 33 units. Again no pathological explanation for the low enzyme concentration could be found. However, perhaps the most suggestive evidence for a familial incidence of an "idiopathic" low pseudocholinesterase level is summarised in the accompanying table where several siblings of two propositi were examined. There is a wide range of normal pseudocholinesterase levels, and, although a given value is fairly constant in the individual, there can be a considerable dissimilarity of normal levels in siblings and we have found differences even in identical twins (parents 82 and 85 units; twins 81 and 96 units).

THE OBSERVATION OF "IDIOPATHIC" LOW PSEUDOCHOLINESTERASE LEVELS IN SIBLINGS

(Units of pseudocholinesterase)

Propositus	Siblings					Husband	Daughter
	1	2	3	4	5		
12	**22**	**66**	**80**	**117**	..	116	79
15	57	**30**	85	**20**	**22**	..	..

While we were able, as stated above, to find a lowered pseudocholinesterase level in a nephew and in a grandchild respectively of two people with a low pseudocholinesterase level, it will be seen from the table that—including the propositi—in one instance two of five siblings and in the other four of six had lowered pseudocholinesterase levels. From the number of people treated with suxamethonium and the number discovered to have a prolonged reaction due to an unexpectedly low pseudocholinesterase level, we can estimate that the incidence of such low levels among otherwise normal people must be well below 1 per 1000. The discovery of six among nine siblings of two propositi seems to indicate that the enzyme deficiency is familial. The sum of all the evidence collected so far seems to point to a recessive gene being responsible.

It is obvious that our collection of material is a slow process and we are reporting our findings to date because of their practical implication. It is important for people to know that they have a low pseudocholinesterase level. They should be given a letter to be handed to the anæsthetist should they ever require an operation. They should be warned that an employment bringing them into contact with anticholinesterases might entail a risk. It now seems to us that not only should every patient who has a prolonged apnœa after suxamethonium be examined for a lowered pseudocholinesterase level, but that his relations should be investigated as well.

In due course we hope to acknowledge fully the help of a number of colleagues, mostly anæsthetists, whose support enables us to carry out this investigation.

H. LEHMANN
M.D. Basle, Ph.D. Camb.
F.R.I.C.

E. RYAN
B.Sc. N.U.I.

St. Bartholomew's Hospital, London, E.C.1

1. Lehmann, H. *Proc. R. Soc. Med.* 1955, **48**, 624.
2. Gray, A. J. *Lancet*, 1950, i, 252.
3. Vetten, K. B., Nicholson, J. C. *Anæsthesia*, 1950, **5**, 175.
4. Barry, C. T., Straton, J., Sutherland, A. R. *Lancet*, 1951, i, 507.
5. Forbat, A., Lehmann, H., Sitz, E. *Ibid*, 1953, ii, 1067.

"... The suggestion that epileptics are people set apart by possession of a special seizure-mechanism is certainly untrue, for the inherent ability to produce a grand mal seizure is present in all mammals. More plausible, and more useful, is the concept of a seizure-threshold, a threshold which is high in healthy adults and low in feverish children; a threshold whose resistance to convulsive discharge is determined by the interplay of maturity, genetic endowment, brain-damage, fever, and the many other variables concerned."—Dr. CHRISTOPHER OUNSTED, *Med. Pr.* April 18, 1956.

Reviews of Books

Practical Urology

Case Comments and Late Results. ALEX E. ROCHE, M.A., M.D., M.CHIR. Camb., F.R.C.S., genito-urinary surgeon, West London Hospital. London: H. K. Lewis. 1956. Pp. 258. 35*s*.

THIS small volume offers a somewhat unorthodox approach to the practice of urology in that, abjuring any formal classification of disease and treatment, it relies on the experience gained from a series of individual cases as a guide to management, thus tending to revert to the method of instruction in the days of surgical apprenticeship, before the advent of modern textbooks.

Mr. Roche has selected 51 cases from his practice over the past twenty-five years. In transcribing the case-records he has retained many abbreviations, which may prove irksome; but interest is sustained by the incisiveness and pungent humour of his accompanying comments. Few, on reading these pages, will not find welcome relief from the dryness of standard textbooks, or fail to appreciate the practical value of many of the conclusions.

The aim throughout is to show that the principles of practical urology should depend on the careful analysis of individual cases rather than on a mass of second-hand statistical evidence. In this respect the book fulfils a useful purpose, despite its somewhat haphazard arrangement.

Methods in Enzymology

Vol. II. Editors: SYDNEY P. COLOWICK and NATHAN O. KAPLAN. New York: Academic Press. London: Academic Books. 1955. Pp. 987. £8 10*s*.

THE second volume of this intensely practical book is concerned with enzymes involved in the metabolism of proteins, nucleic acids, and phosphate-compounds, and also with vitamins and coenzymes and the machinery of cellular respiration; each of these topics claims a separate section.

The allocation of the contents within this necessarily overlapping classification is bound to be somewhat arbitrary. Since the volume contains about 150 separate articles contributed by no less than 130 authors, continuity of presentation is clearly not a prime consideration; but the articles do conform to a basic pattern, which includes detailed working instructions for the assay and preparation of the particular enzyme together with a brief description of the principles underlying the procedures recommended. The headings of the subdivisions enumerated above give, in fact, an incomplete impression of the ground covered; for example, the protein section contains accounts of the enzymes concerned in the metabolism of individual amino-acids and also of the preparation of blood-clotting factors and the components of the renin-hypertensin system. Occasionally the text is enlivened by some discussion of the more general problems raised by work on certain enzymes—for instance, in the articles by M. Laskowski on tryptic digestion and by Gerhard Schmidt on prostatic phosphatase. The book might perhaps have been improved by inserting more such discussions, even at the expense of relegating some of the strictly technical matter to small print.

Most readers, unlike a reviewer, will read only a small section of the book at any one time, and they will find admirably full instructions for preparing any enzyme within its purview; location of the desired material is greatly aided by an exhaustive subject index. Volumes III and IV, which are promised to complete this series, will have a high standard to maintain.

A Textbook of Medical Physiology

ARTHUR C. GUYTON, M.D., professor of physiology and biophysics, University of Mississippi School of Medicine. Philadelphia and London: W. B. Saunders. 1956. Pp. 1030. £4 14*s*. 6*d*.

THIS textbook is written with the praiseworthy intention of presenting "the philosophy and logic of physiology . . . as a series of regulatory systems integrated into one complete functioning organism the human body." The whole field is covered with welcome emphasis on clinical aspects; and there is a final chapter on the physiological effects of radiation which is of great topical interest. Each chapter ends with a well-chosen bibliography but individual references are not given in the text.

The book shows the advantages and the defects of single authorship. It gains in unity, balance, and consistency at the expense of accuracy in detail outside the author's special field—the circulatory system.

In this part of the book the treatment is very elaborate (the student of elementary physiology cannot hope to gain much from the detailed account of the theory of electrocardiography and vectorcardiography). Elsewhere some of the writing is loose, and misleading statements appear from time to time. Thus sweating is said to be controlled by the parasympathetic system, while a diagram correctly shows the sweat-glands innervated by the sympathetic. Ergotamine is spoken of as a vasodilator drug; and pernicious anæmia is alleged to be due to a failure to utilise vitamin B_{12}—an unfortunate choice of verb. Patients with emphysema are said rarely to experience any serious difficulty in excreting carbon dioxide—a statement which ignores important work on the rôle of hypercapnia in respiratory failure.

Such criticism would be captious were this a less ambitious work intended only as a short introduction to the subject; but it is too long, too detailed, and too expensive to fall into this class. On the other hand it is not designed as a major work of reference. Despite many good qualities it seems to fall between two stools.

Praktische Operationslehre—Technique of Operative Surgery—Manual de technique operatoire

Vol. I. DR.MED. RAIMUND WITTMOSER. Translator: JOHN C. FOSTER, F.R.C.S. Vienna: Wilhelm Maudrich. 1956. Pp. 350. DM. 52.

VARIATIONS on a theme by Billroth would be a suitable subtitle for this volume on the technique of gastrectomy. It is written in German, English, and French (reading from left to right across the columns which run from page to page at right-angles to the spine) and is profusely illustrated with photographs touched up here and there for emphasis. This is a painstaking and efficient compilation which leaves nothing to the imagination—not even how to deal with adhesions. There is an admirable description of the method of local anæsthesia for partial gastrectomy. A germanic work, redolent of the great age of gastric surgery which rang with the names of Billroth, Polya, Finsterer, and Schoemaker; but it is surgery by rote.

Manual of Anæsthetic Techniques

WILLIAM J. PRYOR, M.B. N.Z., F.F.A. R.C.S., anæsthetist, thoracic unit, Christchurch Hospital, New Zealand. Bristol: John Wright & Sons. 1956. Pp. 224. 27*s*. 6*d*.

THIS up-to-date and simple guide covers the practical aspects of anæsthesia from the arrangement of an anæsthetic room and the working of the essential equipment to most of the generally accepted techniques. The book is balanced and unbiased and will certainly be useful to doctors learning about anæsthesia. It is marred only by the repeated use of trade names of drugs.

Integrated Gynecology: Principles and Practice

Vols. I, II, and III. I. C. RUBIN, M.D., formerly clinical professor of gynecology, College of Physicians and Surgeons, Columbia University; JOSEF NOVAK, M.D., professor of obstetrics and gynecology, University of Vienna. New York and London: McGraw-Hill. 1956. Vol. I, pp. 589; vol. II, pp. 496; vol. III, pp. 682. £22 10*s*.

THE avowed purpose of this three-volume publication is to present the authors' "views and experiences" and "to emphasise that exclusive restriction to a particular branch of medicine is no longer in keeping with the times." The book has been "primarily designed for use by medical students and general practitioners," but it is "hoped that it will also prove of interest to the specialist." This is a comprehensive publication with all the usual and some rather unusual features: there is a section of some 44 pages on Evolution and Involution, one on Constitutional Disorders and Gynecology, and a large one on Relationship Between Reproductive and other Body Systems (this has 60 pages of references).

Much of the contents belongs to the field of specialist practice; and the work is hardly likely to appeal to students and general practitioners in Britain. The specialist may view the volumes differently, for they reflect the experience of men of understanding and knowledge, and there are huge bibliographies with special emphasis on the German literature. Yet the volumes are disappointing, for every now and then misleading statements appear.

Genital infantilism is said to produce a number of disturbances of sexual function. Seven are listed; the first four are unexceptionable, but not all will agree that congenital infantilism may cause a "tendency to tubal pregnancy" or "lack of resistance against ascending gonorrheal infection" or "prolapse." Some of the methods of treatment that are described, however useful they may have been in the past, should surely not be given so much prominence in a modern work written for students. For example, Halban's operation for retroflexion of the uterus, with suture of the whole uterus up to and including the fundus to the anterior parietal peritoneum, should no longer be even considered. In the section on the construction of an artificial vagina there is a sentence making it clear that the use of "Thiersch grafts on a mould is the method of choice"; but this comes after full descriptions of other methods, including those of Baldwin-Mori and Schubert, which should long ago have been abandoned.

Despite its erudition, this work is unlikely to be widely favoured in Britain.

Les fondements anatomo-radiologiques de l'investigation pulmonaire

F. KOVATS JUN., médecin chef de l'institut d'exploration de la tuberculose, Budapest; Z. ZSEBOK, docent à la IIe clinique chirurgicale universitaire de Budapest. Paris: Masson. 1955. Pp. 336. Fr. 8000.

THIS is a French translation of the third German edition. The book deals with the radiographic appearances of normal lungs, relating the shadows to the structures causing them. The subject is covered in great detail with many radiographs, tomograms, specimens, and line drawings. The reproductions of the radiographs are mostly adequate and often excellent; the bronchograms are particularly good. The book is exhaustive and well produced; but it is likely to interest only a relatively few specialists in anatomy and radiology.

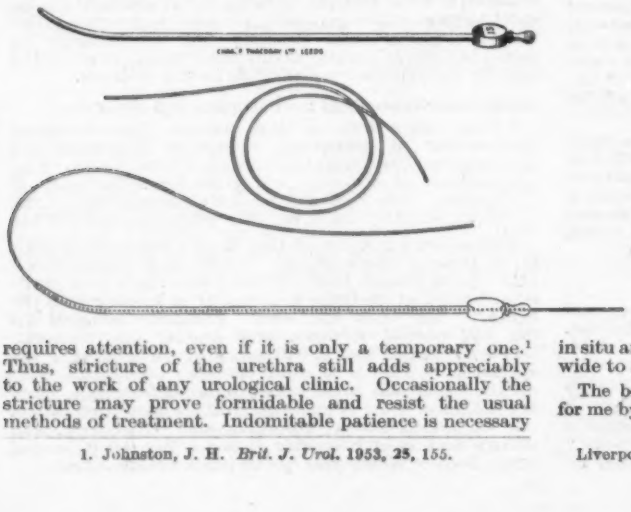
Sick Children (London: Cassell. 1956. Pp. 593. 42*s*.).—In revising Dr. Donald Paterson's well-known textbook for this latest edition, Dr. Reginald Lightwood has brought the text up to date without departing from the general structure of earlier editions. All the common disorders of childhood are dealt with clearly and concisely (the chapter on cardiac disorders is particularly good) as well as some of the rarer diseases. Dr. Cicely Williams contributes a valuable article on diseases of children in the tropics. Despite occasional flaws this is a well-groomed production, balanced, pleasantly readable, and adequately illustrated.

Psychological Medicine (4th ed. Edinburgh: E. & S. Livingstone. 1955. Pp. 406. 21*s*.).—The new edition will maintain the popularity of Dr. Desmond Curran's book. In making an extensive revision, he has had the collaboration of Dr. Maurice Partridge. Some sections, notably the chapters on alcoholism and schizophrenia, have been amplified by including more details of treatment. The emphasis throughout is on descriptive psychiatry, and the authors' scant regard for "dynamic" theories leads to a simplification—some may consider it an over-simplification—in the presentation of their subject, especially in the chapters dealing with the neuroses. The major psychoses, however, are well described, and there are clear outlines of the practical, administrative, and legal aspects of caring for the mentally ill. Those who have had experience of the tact and resourcefulness of the duly authorised officer in dealing with an emergency will welcome the thorough explanation of his status and powers, including the point that he is entitled to form his own opinion of the case.

New Inventions

"RAILWAY" BOUGIES IN THE TREATMENT OF URETHRAL STRICTURE

IT has often been said that in the age of sulphonamides and antibiotics the urethral stricture would virtually disappear. It is a fact that gonorrhœal strictures seem to be less common, but there are still considerable numbers to be dealt with at present—a residuum of the past. For example, during 1954, no less than 115 dilatations for stricture were performed in the urological unit at Sefton General Hospital. Moreover, there are an increasing number of prostatectomies being performed and in almost 20% of these a postoperative stricture



requires attention, even if it is only a temporary one.[1] Thus, stricture of the urethra still adds appreciably to the work of any urological clinic. Occasionally the stricture may prove formidable and resist the usual methods of treatment. Indomitable patience is necessary with these difficult strictures, together with an appreciation of the fact that *prolonged* attempts at urethral instrumentation are definitely harmful. It is much better to abandon the attempt for the day if there has been much urethral bleeding and to repeat the operation a week later. It is surprising how often this second attempt proves successful.

In such a patient it may be that metal and gum-elastic bougies, whips, and filiforms all fail to find the narrow gap. Even if a filiform is successfully passed, it may still be impossible to push the follow-on catheter or bougie through the stricture, because the filiform tends to kink at an acute angle just proximal to the stricture. This is a common experience and emphasises a fundamental defect of the method. For this reason I have, for some years, used a railway-type bougie in which the metal sheath is threaded over the filiform and then guided through the stricture, usually without difficulty. (Bougies based on a similar principle were used in Germany before the late war.) As the filiform is not moving and is merely acting as a guide, there is no tendency for kinking as the metal sheath slides home.

The filiform is approximately 67 cm. in length, of a similar calibre throughout and with similar plain extremities. If there are false passages present the "faggot" method can be used, using several filiforms. When the filiform has been passed through the stricture the metal sheath is threaded over it, the filiform remaining stationary. Sheaths of larger size are passed until the stricture is sufficiently dilated, the sheaths ranging from 8 to 18 charriere. If it is desirable to empty the bladder, the metal sheath can be left in situ and the filiform removed: the lumen is sufficiently wide to allow a steady drip of urine through the sheath.

The bougies in the accompanying figure have been made for me by Messrs. Thackray, of Leeds.

J. COSBIE ROSS
CH.M. Lpool, F.R.C.S.
Liverpool

1. Johnston, J. H. *Brit. J. Urol.* 1953, **25**, 155.

no dandruff on this comb

COMPLETE CONTROL of common dandruff in 92 to 95% of cases . . . control of seborrhoeic dermatitis of the scalp in 81 to 87% of cases . . . this represents the clinically proved effectiveness of SELSUN. It restores the scalp to a normal, healthy state, keeps it free of scales and excessive sebum for a period of one to four weeks after each application. Itching and burning usually stop after two or three applications. SELSUN is applied after washing the hair. It reaches all areas of the scalp, is simple and pleasant to use. Rinses out easily, leaving the scalp clean and odourless. Does not discolour the hair; leaves no greasy stains.

Available in 2 and 4 fl. oz. bottles, with directions for use.

SELSUN REGD. | *(Selenium Sulphide, Abbott)*

Abbott | *SELSUN literature will be sent on request to:*
ABBOTT LABORATORIES LTD · PERIVALE · GREENFORD · MIDDX.

Timothy grass . . . . . insignificant in Yucatan★

★ *in Yucatan the high humidity discourages high pollen concentrations in the air.*

but when pollens are a problem

PIRITON is the most effective therapeutic agent for the control of hay fever symptoms. Owing to its low dosage, lack of side-effects and high degree of tolerance, Piriton may be given with safety over the long periods necessary for adequate control of hay fever. Welcome relief of sneezing and lacrimation is obtained in some cases within 10 minutes and in most cases within 30 minutes; following a single dose, given orally, a relatively symptom-free state may be maintained for up to 6 hours.

Piriton

Trade Mark

TABLETS Piriton Maleate are available in bottles containing 25 and 500 tablets. Each tablet contains 4 mg. of Piriton (chlorpheniramine maleate).

INJECTION of Piriton Maleate is available in boxes of 5 and 100 ampoules of 1 c.c. Each c.c. contains 10 mg. of Piriton (chlorpheniramine maleate).

PAEDIATRIC SYRUP is supplied in bottles of 4 fluid ounces and 2 litres. Each teaspoonful contains 2 mg. of Piriton (chlorpheniramine maleate).

C56/133-4

ALLEN & HANBURYS LTD · LONDON · E·2

TELEPHONE: BISHOPSGATE 3201 (20 LINES). TELEGRAMS: "GREENBURYS, BETH, LONDON"

THE LANCET
LONDON: SATURDAY, JULY 21, 1956

Extremities of the Intersex Scale

WE have grown accustomed to the idea that one extreme in the series of male pseudohermaphrodités is the genetically male but anatomically feminine patient with "ovarian" agenesis or Turner's syndrome. Since it was first reported by POLANI et al.,[1] this has been confirmed from many sources.[2–5] It is also generally accepted that these patients, despite their apparent feminity, have the normal male XY chromosome structure. But all this work is based on the nuclear-sexing techniques devised by BARR, and these give only second-hand information about the true state of the sex chromosomes. It is one matter to assume that, as all normal human beings must be either female and XX or male and XY, those who have a visible sex chromatin body in most of their nuclei are necessarily XX, and those who have not must be XY. It is quite another matter to assume that this is so in those with major sexual anomalies. For instance, GREENE et al.[6] believed their true hermaphrodite was XXY. It is therefore not altogether justifiable to assume that patients with Turner's syndrome without visible sex chromatin have a normal XY chromosome complement. Nevertheless this is still the most likely view, and it is supported by two articles in our present issue.

POLANI was originally led to consider the possibility of maleness in Turner's syndrome by the many cases of the syndrome in which there was coarctation of the aorta—a lesion almost confined to males. With Dr. LESSOF and Dr. BISHOP, he now follows the same line of reasoning with regard to a far more convincing lesion—red-green colour-blindness. From two points of view, this is a much more satisfactory test object than coarctation: in the first place, it is not regarded as part of the syndrome, and cases therefore cannot have been selected on this basis; and, secondly, its genetic background has been very thoroughly worked out. The presence of 4 cases with colour-blindness among 25 examples of Turner's syndrome is exceedingly strong evidence that they have a male chromosome pattern. It is not, however, absolutely conclusive evidence that they are XY. Red-green colour-blindness is carried on the X chromosome, and, since a normal X chromosome overrules an abnormal one, a high frequency means that one, and only one, X chromosome is present. We are now perhaps safe in regarding this as adequately proved. But that is still not absolute proof that they are XY: they might be haploid with a single X and no Y. Some day Turner's syndrome will turn up in a family bearing one of those rare recognisable features—webbing of the toes, for instance—that are carried on the short unpaired segment of the Y chromosome. Then we shall know for certain that they bear the full XY complement. Professor PLATT and Dr. STRATTON likewise base their observations on the hypothesis of the single X chromosome in Turner's syndrome, and they examine the possibility that such a chromosome pattern might arise by parthenogenesis—an unlikely possibility but one well worth exploring. They were able to show by blood-grouping that all 3 of the patients they examined were heterozygous in respect of at least one factor, so that parthenogenesis—at least by the usual single-gamete means—could be ruled out. Thus, both the investigations support the view that the genetic constitution in Turner's syndrome is that of a normal male.

The whole picture has now been complicated, however, by the recognition, at the opposite end of the intersex scale, of a curiously exact mirror-image of Turner's syndrome. Klinefelter's syndrome is one of testicular atrophy in what have always been regarded confidently enough as males, with sequelæ of eunuchoidism, gynæcomastia, and raised levels of follicle-stimulating hormone. Three separate groups, beginning with BARR in Canada,[7] and followed by confirmation from Denmark [8] and South Africa,[9] have now described examples of this syndrome with sex chromatin bodies in their nuclei—i.e., apparent genetic females. Turner's syndrome, which used to be called ovarian agenesis, is now thought to be due to atrophy of the fœtal testis: we must now it seems regard Klinefelter's syndrome, so far called a testicular atrophy, as an example of failure of the fœtal ovary. It all falls exceedingly pat. But some very difficult questions are raised. It was not very hard [1 2 5] to construct hypotheses to account for the fact that the male fœtus, after loss of its gonad, assumes the feminine habitus: but these hypotheses fall to the ground if at the same time the female fœtus, after loss of *its* gonad, assumes the masculine habitus. Perhaps much depends on the fact that, though the Turner "ovary" is apparently functionless, the Klinefelter "testis" is full of active Leydig cells.[8 9] But it seems that the apparent sex in which we are born need not reflect either our chromosome constitution or the presence of properly developed gonads: perhaps there is some third factor—could it be the balance of adrenal cortical steroids?—which tips the scale one way or another when the normal stimulus fails. But before we commit ourselves to hypotheses it is clear that more facts are needed—especially facts derived from series large enough to bear the kind of statistical reasoning used so successfully by Dr. POLANI and his colleagues. We have used the names Turner and Klinefelter because these latest developments have made the terms "testicular, ovarian, or gonadal," "agenesis, dysgenesis, or atrophy" so interchangeable that they have little meaning. In this epicene wonderland, it seems best for the present to stick to eponyms.

1. Polani, P. E., Hunter, W. F., Lennox, B. *Lancet*, 1954, ii, 120.
2. Grumbach, M. M., van Wyk, J. J., Wilkins, L. *J. clin. Endocrin.* 1955, **15**, 1161.
3. Levij, I. S. *Ned. Tijdschr. Geneesk.* 1955, **99**, 1477.
4. Barr, M. L. *In* Modern Trends in Obstetrics and Gynæcology. London, 1955.
5. Lennox, B. *Scot. med. J.* 1955, **1**, 97.
6. Greene, R., Matthews, D., Hughenden, P. E., Howard, A. *Brit. J. Surg.* 1954, **41**, 548.
7. Plunkett, E. R., Barr, M. L. *Anat. Rec.* 1956, **124**, 348.
8. Riis, P., Johnsen, S. G., Mosbech, J. *Lancet*, 1956, i, 962.
9. Jackson, W. P. U., Shapiro, B. G., Uys, C. J., Hoffenberg, R. *Ibid*, p. 969.

The Rh Blood-groups

IN a report on the medicolegal applications of blood-grouping, the American Medical Association's Committee on Medicolegal Problems make some "tentative" proposals on the use, among others, of the Rh groups and their nomenclature.[1] They recommend that "the C-D-E notations for the Rh-Hr types be discarded and that, in approved medicolegal reports, unless and until some other convention is agreed upon, the original Rh-Hr nomenclature be retained as the sole nomenclature for this blood group system." The doctor in this country who has some working knowledge of blood-groups, and the pathologist who deals with them every day, will probably find this decision surprising. The C-D-E nomenclature for the Rh blood-groups, introduced by FISHER and RACE, has been in constant use in this country for over a decade, and the more recently qualified pathologists will have used no other. It has given every satisfaction, being easy to remember and understand; it shows at a glance which antigens and genes are present; and it indicates clearly how to match blood for transfusion when unusual Rh antibodies are present in the blood of the recipient. It has been applied for ten years without needing alteration to the principle or main outline. Why, then, abandon it in favour of a set of symbols that seem to give little help in understanding the serology of the Rh groups and, with their superscripts and subscripts, look so confusing when printed?

The answer lies in the history of how knowledge of the Rh groups developed. They were discovered and reported by LANDSTEINER and WIENER in New York in 1940–41, and originally the distinction was simply between positive and negative blood (Rh+ and Rh–). As work progressed it became clear that they were complex affairs; at first subgroups labelled Rh_1 and Rh_2 were recognised; soon other types were added; and by 1945 WIENER's classification had 8 types designated by symbols like Rh_1, Rh′, and Rh_0—some confusion being caused because he had not only added new symbols but changed the meaning of existing ones. Early in this investigation LEVINE came across a serum that agglutinated all Rh-negative red cells and many Rh-positive ones too; and because this antibody appeared to be related to the Rh system, it was named anti-Hr. Later, variants of Hr were found and were distinguished by superscript dashes (Hr′, &c.). In this way the Rh-Hr nomenclature has been built up, and its present state is set out in the tables of the A.M.A. committee's report.

In 1943–45 FISHER and RACE and their colleagues worked out a nomenclature on a different basis. FISHER, from a study of British results on the isolation of the Rh genes, proposed that a rational explanation of the facts could be given if it was assumed that there were six Rh antigens, arranged in 3 allelomorphic pairs. He used the symbols C, c, D, d, E, and e to indicate these pairs. Since the relation between the members of these pairs was one of genetic allelomorphism, only one of each pair (C or c) could be carried by any one chromosome; and since every cell, except the sex cells, carries a double set of chromosomes, the genetic constitution for C can be

homozygous CC or cc, or heterozygous Cc

and there would be 3 similar types for D and 3 for E. Thus with 3 possible choices for each of the 3 allelomorphs, $3^3=27$ possible Rh blood types should be distinguishable. At the time this hypothesis was propounded, anti-d and anti-e sera were not known, the type CdE had not been found, and the reactions for the type CDE were incompletely known. Subsequent research has discovered the missing sera and types, though the anti-d sera are still doubtful; the reactions that could be predicted have been shown to exist; and the correctness of FISHER's ideas has thus gained valuable support.

WIENER, however, does not accept the Fisher-Race theory of 3 allelomorphic pairs of linked genes; he prefers an explanation based on the existence of multiple allelomorphs of a single complex gene. Consequently he has retained the Rh-Hr notation, expanding it when necessary to include rare antigens, such as C^w, which he names rh^w, or unusual types like –D–, for which he uses the symbol ℟. He has supported his objections by a wealth of serological, genetic, statistical, and anthropological papers, all of undoubted scientific value; and also, when his interpretation of his results has failed to convert the opposition, he has resorted to the 18th-century technique of broadside and lampoon to ridicule what he regards as the fallacies and paradoxes of the C-D-E notation. Reproductions of the papers he thinks most important are conveniently gathered together in his book *The Rh-Hr Blood Types*.[2]

The reasons for the continued use of the C-D-E nomenclature have been set out by various writers. Thus RACE and SANGER [3] point out that the differences between the two systems concern only notation and the "highly academic and interesting point whether the three allelomorphic sites of Fisher are to be placed within or without the boundary of one gene." They hold that, for clinical purposes, all that is needed is to know whether the patient is Rh-positive or Rh-negative, and whether or not anti-Rh antibodies are present; in the case of fathers of children with hæmolytic disease, we must also ascertain whether the father is Rh-positive, homozygous, or heterozygous. They note that only the C-D-E notation indicates which antigens and genes are present, and they are convinced that anti-C and anti-D are more rational names for antibodies than anti-rh′ and anti-Rh_0. In America too, the Fisher-Race hypothesis has had much support for severely practical reasons. Thus J. M. HILL [4] writes:

"While it may take some period of time for the accumulation of sufficient evidence to satisfy geneticists as to the ultimate correctness of the different theories of inheritance and systems of nomenclature, the clinical pathologist is daily confronted with problems which he can solve more easily by the concept of Fisher and Race. In practical application with a large transfusion service, in teaching medical students and technicians, and even in explaining incompatibility problems of erythroblastosis or of transfusions to patients, we have found the CDE system to be most satisfactory."

1. A.M.A. Committee on Medicolegal Problems: report on medicolegal applications of blood-grouping tests. (Wiener, A. S., Owen, R. D., Stormont, C., Wexler, I. B.) *J. Amer. med. Ass.* 1956, **161**, 233.
2. Wiener, A. S. Rh-Hr Blood Types. New York, 1954.
3. Race, R. R., Sanger, R. Blood Groups in Man. Oxford, 1954.
4. Hill, J. M. *Amer. J. clin. Path.* 1947, **17**, 494.

The A.M.A. report is concerned with medicolegal applications of blood-grouping, and this is something of which we in this country have relatively little experience. The courts here, which still show much reluctance to rely on scientific evidence, will not order tests to be made at public expense; and consequently the National Blood Transfusion Service, which alone has the necessary facilities, will not normally investigate cases of disputed paternity. To carry out such investigations on a private basis is very costly, and few of the persons involved in paternity disputes are able to afford large fees. But in Denmark, where some 2000 cases of disputed paternity are settled annually, blood tests are compulsory, and the University Institute of Legal Medicine at Copenhagen undertakes them. ANDREASEN,[5] in an account of this work, expresses his opinion that, as our knowledge of the heredity of the Rh groups is still incomplete, the nomenclature dispute is not of much importance; and he also notes the small difference between the two hypotheses. So he is guided by practical considerations:

"... irrespective of the theories, the same thing applies to the Rh system as to the A-B-O system and the M-N system. Children can never acquire characters which cannot be demonstrated in one or both parents. This affords the basis for the medicolegal application of the system, and from this point of view, the Fisher-Race theory must be considered the most illustrative and most comprehensive one."

5. Andreasen, P. H. Human Blood Groups. Springfield, Ill., 1952.

From all this it seems unlikely that, outside the United States, pathologists and others will wish to change over from the Fisher-Race to the Wiener nomenclature—a change which would involve much effort. We need not, however, be afraid that, guided by the A.M.A. committee's report, American workers are likely to retire, unfashionably, into serological isolation. The committee had Dr. WIENER as a member, and it seems from a footnote that some other interested experts in the U.S.A. disagree with its report. We have given few references and omitted many points because the literature is so large: those interested will find guides in the volumes of RACE and SANGER, WIENER, and ANDREASEN that we have already quoted, and in MOURANT'S.[6] A survey of present views suggests that in the U.S.A. the Surgeon-General's recommendation that both nomenclatures should be used will be followed for a time, though elsewhere the C-D-E notation will remain current. What matters most, surely, is that no-one has been shown to suffer because one notation has been used instead of the other. The fulminations of WIENER and his associates remind us, indeed, of the verse from the *Ingoldsby Legends*:

"Never was heard such a terrible curse!
But what gave rise
To no little surprise,
Nobody seem'd one penny the worse!"

6. Mourant, A. E. Distribution of the Human Blood Groups. Oxford. 1954.

Annotations

RADIOACTIVE WATERS

THE safe disposal of radioactive waste from atomic power-stations will become more difficult as atomic power is more widely used. The return of contaminated water to the sea, either directly or by way of rivers, may not at the moment be a serious danger to man; but there are signs that it may already be affecting marine animals and plants. In a paper lately published by the Permanent International Council for the Exploration of the Sea, Dr. Maurice Fontaine reviews some of the results of recent work on radioactivity in the sea.[1] The radioactive effluents contain isotopes of trace elements, and these are concentrated by marine animals and plants—often in an alarming way. In the United States, the river Clinch receives waste from the Oak Ridge atomic plant, and it has been found to contain plankton with a mean radioactivity 10,000 times greater than plankton in parts of the river not affected by waste. The U.S. Atomic Energy Commission recorded striking changes among the fish in White Oak Lake in Tennessee valley, despite the fact that the lake is only slightly polluted by atomic effluents. The reproduction-rate, growth, and longevity of fish were reduced, and two species had practically disappeared. The affinity of plankton for certain isotopes may be reflected in the finding that herbivorous fish in the Bikini area were fixing isotopes at ten times the concentrations reached by carnivorous fish in the same waters. Radioactive contamination of water in the region of an atomic explosion has been shown to persist for some months, and Sevitt[2] estimated that at least half the Pacific had been contaminated by hydrogen-bomb explosions.

However far contamination of the seas by bombs and atomic waste has in fact gone, we have no clear idea of what damage it may do, directly or indirectly, to human populations. Our ignorance in this matter adds another reason to those we have lately discussed[3] for abandoning at once the firing of nuclear weapons. In Monday's debate in the Commons, reported on p. 150, Dr. Summerskill expressed alarm, which many will share, at the Government's hesitancy. Mr. Turton's reply was that the M.R.C. report was reassuring and that the Government were prepared to discuss methods of regulating and limiting test explosions "which took account of their own position as well as that of other Powers." Not everyone read reassurance into the words of the M.R.C. committee, and we hope that the Government will soon decide to do more than be prepared for discussions: on the present evidence, the only course that is certainly safe is to stop the explosions.

1. *Times*, July 16, 1956.
2. Sevitt, S. *Lancet*, 1955, ii, 199.

CHEMICAL TREATMENT OF ARTERIAL GRAFTS

IT is seven years since Gross and his colleagues[4] reported the first successful arterial homografts in man. This kind of grafting has now become routine in most of the large surgical centres of the world. In Great Britain alone, one group[5] have lately reported their experience of 99 cases, using grafts stored both by freezing and by freeze-drying. These methods of prolonged storage have partly offset the scarcity of donors: at least, no grafts are wasted as they were when refrigeration in saline was the practice in artery banking. But the difficulty is now not so much to keep the grafts for a long time as to provide enough of them, particularly special grafts for such sites as the aortic bifurcation. This is one of the most useful and important sites for grafting, both in the treatment of disabling thrombotic occlusion and for an aneurysm that threatens to burst. Since each donor yields only one such graft, they are always scarce.

Another obstacle is the need to collect grafts aseptically. If this need could be avoided, the banking of arteries would be a good deal easier; and the routine of the post-

3. *Ibid*, 1956, i, 999; *Ibid*, July 14, 1956, p. 81.
4. Gross, R. E., Bill, A. H., Peirce, E. C. *Surg. Gynec. Obstet.* 1949, **88**, 689.
5. Rob, C. G., Eastcott, H. H. G., Owen, K. *Brit. J. Surg.* 1956, **43**, 449; see *Lancet*, July 7, 1956, p. 26.

mortem room need no longer be disturbed by the presence of surgeons and their sterile equipment. Arteries could be taken at any time, and disinfected and stored, so that the stock would quickly grow.

So far the first principle of the artery bank has been to provide material in "fresh" (i.e., undenatured) condition, whichever of the common methods is used. But there is an entirely different possibility—the use of chemically treated grafts. This would have the double merit of simplicity and cheapness. A substance is needed which will both disinfect the donor arteries and, if possible, preserve them indefinitely, preferably at room-temperature. Formalin is such a substance, and it was investigated from this point of view by Levin and Larkin [6] in 1909. They showed that good results followed grafting with formalin-fixed artery in the dog. As Peirce et al.[7] showed, however, these grafts tend to calcify a few months after insertion, and other degenerative changes can often be found even in grafts which have remained patent. A shorter period of formalin treatment was suggested by Brunnen [8] with the object of sterilisation only, the grafts then being stored frozen.

The best-known reagent for this purpose is ethylene oxide. This substance, a volatile, toxic, and explosive liquid, familiar to the food industry and to industrial chemists, was first used to sterilise contaminated arterial grafts by Hufnagel et al.[9] Using the liquid form, they reported that experimentally their results were comparable with those previously obtained with "fresh" grafts. The heaviest bacterial contamination can be overcome after a half to one hour's immersion in ethylene oxide. Ethylene-oxide vapour can also be introduced into the vacuum system of a freeze-drying apparatus [10] to sterilise it, and perhaps the grafts as well, though this is not so sure as with the liquid.

Clearly there is a field for further research in this special aspect of surgical technique; it is just the kind of investigation which in America has so often proved fruitful in recent years. From Seattle comes an interesting contribution [11]; the effects of ethylene-oxide treatment are compared with those of three related compounds, using them as preservatives as well as for disinfection. On the whole, it was found that a short immersion, for the removal of infection, followed by storage in a deep-freeze, gave the best results; but some good grafts were obtained after they had been stored at room-temperature in the substance concerned. Notable in this respect was ethylene carbonate, which also has the advantage of much lower toxicity than ethylene oxide, and is non-volatile at room-temperature, its melting-point being 36°C. The incidence of thrombosis was higher in this treated series than with fresh untreated control grafts, though calcification was, if anything, slightly less. When these grafts were placed in growing pigs, a gradual dilatation was observed, which was roughly proportional to the growth of the host's aorta on either side. No aneurysm was seen. It is also true that so far no case of aneurysm formation has yet been described in a human arterial graft, preserved and inserted by an accepted method.

It remains to be seen whether these chemically denatured grafts will measure up to the high standards already set; for convenience and simplicity will have been dearly bought if they do not, particularly now that synthetic pliable prostheses are proving so satisfactory in the aorta and its bifurcation.[5] These plastic tubes, however, have not yet proved entirely satisfactory in the limb arteries, in which the homograft is still the method of choice; in future perhaps it may be a chemically treated homograft.

6. Levin, I., Larkin, J. H. *Proc. Soc. exp. Biol., N.Y.* 1909, **5**, 109.
7. Peirce, E. C., Rheinlander, H. F., Moritz, A. R., Gross, R. E., Merrill, K. *Amer. J. Surg.* 1949, **78**, 314.
8. Brunnen, P. L. *Guy's Hosp. Rep.* 1953, **102**, 194.
9. Hufnagel, C. A., Rabil, P., Reed, L. *Surg. Forum*, 1953, p. 162.
10. Hallen, L. G. *Acta chir. scand.* 1955, **204**, suppl.
11. Eade, G. M., Fletcher, T. L., Schlosser, R. J., Zech, R. K., Harkins, H. N. *Surgery*, 1956, **39**, 515.

INTRAHEPATIC BILIARY OBSTRUCTION

THE idea that an obstructive form of jaundice can result from a diffuse lesion of the intrahepatic bile-ducts has been gradually evolving since it was first mooted by Siegmund [1] twenty-five years ago. Its close resemblance, clinically and pathologically, to extrahepatic biliary obstruction is one of the chief difficulties in the diagnosis of hepatic disease. As the extrahepatic forms of biliary obstruction usually need surgical treatment, which is contra-indicated for the diffuse intrahepatic forms, the differential diagnosis is of great practical significance.

The changes in the liver in a typical case are characteristic. Apart from some bile staining of the centrilobular cells, the liver parenchyma shows remarkably little sign of injury. The two outstanding changes are plugging of the intralobular bile capillaries with inspissated bile, and considerable infiltration of the portal triads with lymphocytes, histiocytes, and sometimes with polymorphs and eosinophils. This cellular infiltration often seems great enough to obstruct the flow of bile by compressing the small biliary passages; but, on the other hand, it not uncommonly seems inadequate to account for the obstruction. Watson and Hoffbauer [2] have therefore suggested that the primary lesion involves the bile-ducts at the periphery of the lobules and permits direct leakage of bile into the adjacent lymphatics and blood-vessels.

Most examples of this condition seen in recent years have probably been due to infection with one or other of the hepatitis viruses. During any large epidemic of viral hepatitis some patients show hardly any signs of parenchymal damage, and obstructive features predominate. This form of the disease tends to run a longer course with an average duration of two to four months, compared with two to four weeks in the commoner form; and this, coupled with the lack of laboratory findings of liver-cell damage, often leads to a diagnosis of extrahepatic obstruction and to operation. Isolated cases are especially likely to be misdiagnosed and operated on. It is now clear that various drugs can produce a similar condition. The evidence incriminating arsphenamine, methyltestosterone, and chlorpromazine is fairly conclusive; and several other substances—e.g., toluylenediamene and manganese salts—have also been suspect. Clinically and pathologically these drug-induced forms of the disease do not differ strikingly from the viral forms, although the cellular reaction in the portal triads is often less pronounced and the jaundice does not last so long.

In his paper on p. 109 Mr. MacPhee groups the characteristic clinical features into three stages. In the preliminary stage the picture is that of an infective hepatitis with some emphasis on biliary obstruction. During this stage the indications of parenchymal involvement disappear, leaving a pure picture of biliary obstruction. In the next stage the signs of portal obstruction develop; and in the final stage the liver cells are damaged and liver failure results. The pathological and biochemical changes follow the same sequence.

A reliable test for the differentiation of cholangiolitic biliary obstruction from the extrahepatic forms would be of great value. The two cases of viral cholangiolitis reported by Johnson and Doenges [3] are therefore of special interest. Both patients presented with symptoms of biliary obstruction and laboratory findings indicating non-parenchymal involvement. In the first patient laparotomy showed some œdema and thickening of the extrahepatic bile passages but no evidence of their obstruction. Postoperative corticotrophin (A.C.T.H.), given by intravenous drip, was followed in forty-eight hours by dramatic re-establishment of bile flow and rapid clinical recovery. The second case was so similar that

1. Siegmund, H. *Beitr. path. Anat.* 1931, **87**, 425.
2. Watson, C. J., Hoffbauer, F. W. *Ann. intern. Med.* 1946, **25**, 195.
3. Johnson, H. C., Doenges, J. P. *Ibid*, 1956, **44**, 589.

corticotrophin was tried before laparotomy with an equally dramatic result. Conclusions from only 2 cases may well be misleading, but as Johnson and Doenges point out there is little to be lost by such a therapeutic test, and when it is successful the patient is spared a useless laparotomy. Similar treatment in a few reported cases of drug-induced cholestasis has done little good, but there is at present no evidence that the pathogenesis of the viral and drug-induced forms of the disease is identical and the therapeutic response in the viral form might perhaps be related to the greater inflammatory reaction caused by the virus. In 2 of Mr. McPhee's patients cortisone was tried without objective benefit; but the anti-inflammatory action of cortisone is probably inferior to that of corticotrophin, and further trial of intravenous corticotrophin seems justified.

ARTIFICIAL PNEUMOTHORAX

IN pulmonary tuberculosis a particular form of treatment can never be quickly assessed; and there is now the added complexity that chemotherapy has profoundly influenced the results obtained by mechanical methods, not only making them safer but extending their range. Such methods have to be newly evaluated in the improved conditions created by chemotherapy, and the rapidly changing situation has rendered valid comparisons difficult.

In choosing an active form of treatment for pulmonary tuberculosis, there has been in recent years a definite bias towards those which aim at permanent control of the disease—particularly resection—though this bias may be less noticeable than it was.[1] The more temporary "inflationary" methods, such as artificial pneumothorax, extrapleural pneumothorax and, to a lesser extent, pneumoperitoneum, have lost favour, in spite of the advantages of preliminary chemotherapy. As early as 1952 Simmonds et al.[2] pointed out that chemotherapy had made artificial pneumothorax safer but it had not made it more widely used. And before this the pleural hazards of artificial pneumothorax had considerably restricted its application. The uncertainties of the method, both in its early stages and later when the pneumothorax was abandoned, taken in conjunction with the risk of impairing pulmonary function, persuaded many physicians to look for better methods. Chemotherapy alone often seemed sufficient, and when it was not, major surgery could often offer a satisfactory alternative. But time has shown that even the simpler forms of resection are not free from complications and it is natural to ask whether artificial pneumothorax might still have a place.

Ellman and his colleagues [3] have lately reviewed the results of pneumothorax in 152 patients whose treatment began before the introduction of chemotherapy. They conclude that "even without chemotherapy good results may be anticipated provided cases are carefully selected and managed under uniform control." They believe that notable sources of danger such as tension cavities, major atelectases, spread of disease during treatment, and effusions are likely to be controlled by chemotherapy, and the expectation therefore is that "with prolonged chemotherapy the results of artificial pneumothorax treatment will be even better, and its use in selected cases appears more than justified." It has not yet, however, been conclusively demonstrated that the results of artificial pneumothorax are better than those of resection in a comparable series, nor even that they are better than chemotherapy alone. A year ago [4] we suggested that the question would probably be settled, not by a definitive controlled trial, but by the slow evolution of medical opinion, influenced more by personal observation than by published statistics. This evolution is still proceeding and new aspects of the matter are becoming apparent. Some physicians have abandoned pneumothorax entirely and many are using it sparingly: those who do use it generally advocate a shorter period of maintenance, from a minimum of six months to a maximum of three years; and nearly everyone finds it hard to define positive indications for its induction. One argument in its favour is that a pneumothorax makes admission to a specialised hospital unnecessary and that time will thereby be saved because the chest physician can manage the whole course of treatment in beds under his direct control. Secondary arguments such as this, however, merely illustrate that the main emphasis in treatment has shifted to other methods; and the induction of a pneumothorax, while still permissible, now requires justification in the face of these methods. Most people agree that it should be performed only when the disease is of limited extent. Adequate chemotherapy *beforehand* is essential, for in certain respects chemotherapy and collapse are antagonistic; collapse reduces the blood-supply to the affected part and at the same time reduces the direct supply of oxygen, thus inhibiting the stage of multiplication during which the organisms are most vulnerable to drugs. The place of every form of treatment has now to be considered in relation to chemotherapy, and clearly those which may blunt its efficacy must be used with nice judgment.

1. See *Lancet*, July 7, 1956, p. 25.
2. Simmonds, F. A. H., Laird, R., Macdonald, N. *Ibid*, 1952, ii, 347.
3. Ellman, P., Johnson, J. H. P., Kagan, A. *Brit. J. Tuberc.* 1956, **50**, 130.
4. *Lancet*, 1955, ii, 26.

DEPUTY C.M.O.

THROUGHOUT the long and eventful period since 1940, Sir Weldon Dalrymple-Champneys has been deputy chief medical officer at the Ministry of Health, and his retirement at the end of this month closes nearly thirty years' work for the Ministry.

That work has had remarkable variety, and he can recall, among other tasks ably performed, his chairmanship of the Joint Committee on Venereal Diseases (set up in 1943), of the Vegetable Drugs Committee (which secured supplies of drugs during the war), of the Pharmaceutical Liaison Committee, of the Drug Requirements Advisory Committee, and of the Medical Supplies Working Party. Also in recent years he has been closely concerned with the development, distribution, and testing of new remedies. But administration has never seemed to make him less a physician, and its preoccupations have not even prevented his becoming a medical expert in his own right. He has made himself, for example, an authority on undulant fever, on which he gave the Milroy lectures to the Royal College of Physicians in 1950, and his status in this subject was recognised internationally when he became chairman of the Joint W.H.O./F.A.O. expert committee on brucellosis. A linguist, a biologist, and a traveller, he has brought back venomous spiders from South Africa and venomous snakes from Brazil, and he has himself studied the properties of snake venom. He is on the council of the Royal Veterinary College, and at the Royal Society of Medicine the section of comparative medicine shares his interest with those of epidemiology and medical history. In many different places and circumstances people who expected to meet an official have found a colleague and often a friend.

From the beginning of August, the two deputy C.M.O.s will be Dr. G. E. Godber, who was appointed to that post in 1950, and Dr. George Clark. Before he joined the Ministry, as a principal medical officer, in 1946, Dr. Clark was dean of the faculty of medicine at Sheffield. He was a member of the commission which in 1952 inquired into the health needs of the Gold Coast, and chairman of the commission which in 1954 made a similar survey in British Guiana.

Sir HARRY PLATT has been re-elected president of the Royal College of Surgeons of England.

Sir SIMON MARKS is to give the college £52,500 over the next seven years. The gift is a tribute to Sir ARCHIBALD MCINDOE.

Special Articles

OUTBREAK OF STREPTOCOCCAL INFECTION IN A MATERNITY UNIT

J. D. ALLAN GRAY
T.D., M.B., B.Sc. Edin., F.R.C.P.E., D.P.H.
PATHOLOGIST, CENTRAL MIDDLESEX HOSPITAL, LONDON

SINCE the introduction of the sulphonamides and antibiotics, there has been a temptation to ignore or underestimate the pathogenicity of hæmolytic streptococci and to believe that cross-infection with them in a hospital now rarely or never occurs. Anyone with such views would have been sharply disillusioned by the outbreak of streptococcal infection which occurred between March and July, 1955, among the patients and staff of the maternity department of this hospital, necessitating its closure for eighteen days.

The maternity department contains 86 beds in three wards—ward O1 of 28 beds and ward O2 of 30 beds in one building, and ward F1 of 28 beds in another building. Each of the wards is divided into small rooms. There are cots for babies. The number of births is about 2000 per annum. The patients are confined in the labour wards of wards O1 and O2, and if the puerperium is uneventful some are transferred about the third day to ward F1. The medical staff number 7 and the nursing staff 65, including 44 pupil midwives.

Account of Outbreak

The organism was a β-hæmolytic streptococcus of Lancefield group A; its type was determined by Dr. R. E. O. Williams as 8/25.

STAFF

The organism was first isolated from a throat swab taken on March 3 from a pupil midwife. The next day a doctor, and two days later 2 more pupil midwives, were being treated for sore throats but swabs were not submitted to the laboratory. Up till then, the treatment consisted of sulphonamides for four days. This did not clear the infections, and on March 19 weekly routine mass swabbing was instituted for all employed in the maternity unit—medical and nursing staff, midwives, students, secretaries, porters, laboratory technicians, physiotherapists, and almoners. It was found that 14 of the staff were harbouring β-hæmolytic streptococci in their throats; and the type was 8/25 in 9—the highest number ever found at one time. A lull followed; for the first three weeks of April the organism was found in only 3 of the staff, and it was not until May 10 that the daily number of positive findings of type 8/25 streptococcus rose above 1.

A very high proportion of both the nose and throat swabs (at least over 50% and 30% respectively) contained coagulase-positive staphylococci, which were practically all penicillin-resistant. No relation was then suspected between the staphylococci and the hæmolytic streptococci, and so a record was not kept of the finding of staphylococci. This was unfortunate because Rountree (1955) has suggested that by producing penicillinase they may interfere with the action of penicillin on the streptococci.

By August, six weeks after the end of the outbreak and after a long period of dry weather, only 4 of 79 throat swabs taken yielded β-hæmolytic streptococci and none of these belonged to group A. Of the same 79 swabs 10 showed both the streptococci and staphylococci. At the end of November none of 84 members of the staff (many of them different from before) showed β-hæmolytic streptococci in either the nose or throat, but 30 showed staphylococci (all coagulase-positive and penicillin-resistant) in the nose and 3 in the throat.

At first, swabs were taken from both the nose and throat of each member of the staff. Of several thousand swabs, only 2 nasal ones were found to contain β-hæmolytic streptococci, and in both of these cases the throat swabs were also positive. Nasal swabs were therefore omitted from some of the later mass swabbings.

Source of Strain

The ultimate source of the strain was never established with certainty.

The midwife in whom the infection was first diagnosed had come in October, 1954, from a provincial hospital where she had been trained. The bacteriologist there had not met any unusual streptococcal infections at that time. In January, this midwife had pricked her thumb on a napkin pin. Her nail was removed because of sepsis, but unfortunately no bacteriological examination was made. Starting in March she had on at least three occasions a sore throat associated with type 8/25 streptococcus. Her tonsils were removed on April 16. She had a fortnight's holiday, and after two negative swabs returned to duty in May. At the next mass swabbing her throat, although it looked healthy, yielded streptococci of the same type. She was given 500,000 units of penicillin twice a day for five days, but on May 19 a further swab was positive. Her companion, who had come from the same hospital and who shared a room with her, was found on March 17 to have the same organism in her throat. Despite tonsillectomy she also became an extremely resistant carrier.

Isolation

When hæmolytic streptococci were found, the person concerned was isolated, whether there was any clinical evidence of infection or not. The criteria for release from isolation were absence of clinical evidence of infection and at least two successive negative swabs (see Medical Research Council 1951); but owing to shortage of staff the rule that at least three days should elapse between the two negative swabs was waived. The Medical Research Council (1951) also suggests that for maternity units three negative swabs should be obtained at daily intervals from both nose and throat and from any infected site.

Treatment

The stubbornness of the organism against accepted forms of treatment was remarkable. In vitro it was resistant to all the sulphonamides tested (sulphathiazole, sulphadimidine, sulphadiazine, sulphamerazine, and sulphamezathine), and likewise clinically it had not responded to sulphonamides. Although it yielded to penicillin in the laboratory, repeated doses of penicillin followed by a fortnight's holiday failed to clear it from the throats of some of the staff. The ear, nose, and throat specialist then performed tonsillectomy on a sister and 5 midwives. Even after this, and a further fortnight's holiday, all 6 yielded hæmolytic streptococci from their throats although clinically they were healthy; in 5 of the 6, the organism was type 8/25. At the time it seemed possible that the staff were reinfecting each other, since some were sharing rooms. Single rooms were therefore provided and a general improvement made in the hygiene of the pupil midwives. The 20 people who still harboured the streptococci were segregated and treated with 250,000 units of penicillin combined with 1 g. streptomycin twice daily for three days followed by the same amount of penicillin alone for a further two days. The streptococci were eliminated, and staphylococcal enteritis developed in none. The criteria for return to duty were now clinical absence of evidence of infection and negative swabs on four successive days starting at least one day after the end of the treatment.

Spread of Infection

Before the combined use of penicillin and streptomycin the organism spread until no fewer than 55 different members of the staff had yielded it at one time or other. Only about half of them experienced sore throats and none showed the clinical manifestations of scarlet fever. Many of them must therefore have been on duty while harbouring the streptococci, and the patients inevitably

became infected. All the staff who had direct contact with any of the patients shown to harbour hæmolytic streptococci were swabbed.

The allocation of the pupil midwives to the different parts of a maternity unit greatly influences the chances of spreading an infection. The postings are changed often, so that each pupil may serve in all the sections; and even 1 carrier of infection remaining on duty undetected may disseminate her pathogens widely throughout the unit.

PATIENTS

The infection appeared simultaneously in 2 postnatal patients in different wards (F1 and O1) on March 15. One had a sore throat with a positive swab, and next day a vaginal swab also was positive. The other patient had pyrexia and her blood yielded the organism. Four days later the infection appeared in the third maternity ward (O2), and after a further ten days the organism was found in a vaginal swab from a patient in the postnatal clinic. Simultaneously with the lull in the findings among the staff in the first three weeks of April the organism was not isolated from any patient. Within the next ten days, however, 10 patients yielded it. There was then a complete absence of positive results among the patients for the next thirteen days (May 14–26); but within the following three weeks 19 patients gave positive swabs. Eventually 57 patients in all were found to have harboured type 8/25 streptococcus. The vast majority of these showed little or no evidence of infection. 34 of them were mothers, 22 were infants, and 1 was the husband of a mother.

Mothers

Of the 34 mothers, 22 were shown to harbour the organism before their discharge from hospital. Only 16 of these had pyrexia warranting notification; the arbitrary standard for notification of puerperal pyrexia takes no account of ætiological factors.

Only 1 of the mothers was seriously ill. She was a primigravida, aged 31. Uterine inertia prolonged her labour to nearly forty-nine hours and necessitated a forceps delivery (March 5). She had pre-eclamptic toxæmia. Two days after her delivery her mother died suddenly. On the fourth day her temperature rose to 102·3°F but she had no localising signs. A high vaginal swab and blood-culture yielded type 8/25 streptococcus. The throat swab was negative, and the disorder responded immediately and completely to penicillin.

In the other mothers the organism was found 16 times in the throat, 21 times in the vagina, once in the nose, once on the nipple, and once on the buttock. 5 of the women showed the organism in both throat and vagina, 1 in both throat and nose, and 1 both in the throat and on the nipple. The infant of the mother whose nipple yielded the organism contracted the infection.

Infants

Of the 22 infections in infants 3 were generalised, and 2 of these were fatal.

The 1st infant with generalised infection was born on March 29 after a normal delivery. On April 2 it was taken off the breast on account of a cracked nipple. On April 4 its temperature was 100·6°F and it showed twitching. It was thought to have cerebral damage and was given chloral and aureomycin. Despite this treatment it had convulsions and died on April 7. Necropsy showed purulent meningitis due to streptococcus type 8/25.

The 2nd infant was the second child of a woman whose first pregnancy had been terminated on account of pulmonary tuberculosis. Its birth, on May 25, had been effected with low forceps because of fœtal distress. Its progress was satisfactory and on the ninth day it was given B.C.G. vaccine 0·1 ml. into the left arm. With its mother it was discharged on the eleventh day, when both were in apparently good condition. Six days later the child was brought to the casualty department with supposed bronchopneumonia, and on arrival was found to be dead. A coroner's necropsy showed that the cause of death was a retropharyngeal abscess; and the throat, umbilicus, and cerebrospinal fluid all yielded the now familiar type of β-hæmolytic streptococcus.

The 3rd infant was a ninth child born at full term on March 11. It weighed only 5 lb. 14 oz. and had to be artificially fed. On the thirteenth day its temperature was 101°F and a swelling appeared over the right clavicle. Aureomycin was given, and after five days the child seemed well. The mother was anxious to go home on account of home difficulties, and as the baby was gaining weight they were both discharged on the twenty-second day (April 2). On April 20 the infant was readmitted with multiple osteomyelitis at the site of the original swelling in the right clavicle and in the left scapula and humerus, both femurs and hips, and the right knee. Type 8/25 streptococcus was isolated repeatedly. After treatment with aureomycin and repeated aspirations of pus, the child made a good recovery. Partial dislocation of both hips—possibly a result of the osteomyelitis—was treated by immobilisation in a frog plaster.

Of the remaining 19 infections in infants the umbilicus was involved in 18 and the ear in 1. Thus the modern custom of leaving the umbilical stump uncovered demonstrated the widespread dissemination of the organism in the nursery.

"Return Cases"

Apart from the patients who were known to harbour the organism while they were in the wards, 12 mothers and 2 babies (already described) were found to be infected after their discharge from hospital. All these had been discharged in apparent health, except 1 mother who took her discharge against advice on the fifth day and who had to be readmitted a month later with endometritis and a local perineal abscess. Presumably these patients had been infected while in hospital, but the transference of the infection between mothers and babies after their discharge cannot be excluded. 7 of the mothers were found in the postnatal clinic to have slight vaginal discharges, which all yielded type 8/25 streptococcus—in 1 case as late as forty-four days after delivery. None of these 7 women had to be readmitted. The 4 remaining patients had pelvic infections, which all responded to antibiotics—3 in the gynæcological wards and 1 in the care of her general practitioner.

In addition to these return cases a railway fireman came to the casualty department on June 13 with a sore throat which yielded streptococcus type 8/25. His wife had had a normal delivery in the unit on April 10. Next day she had had a rigor and temperature of 104·8°F. These were ascribed to urinary infection, because streptococci were not found in her vagina, urine, or blood-culture. She responded well to penicillin and a sulphonamide. She was said to have had a sore throat since her discharge. The bacteriological findings in her husband's throat suggested that she must have been infected with the organism, but as it was not isolated from her she is not included among those infected in the hospital or among the return cases.

Distribution of Infection

The distribution of the infection in the hospital and among the "return cases" was as follows:

	Mothers	*Infants*	*Contacts*	*Total*
Maternity wards:				
O1	7	6	0	13
O2	5	2	0	7
F1	10	11	0	21
Postnatal clinic	7	0	0	7
Children's ward E1	0	1	0	1
Gynæcological wards A1 and A2	4	0	0	4
Necropsies on 2 children	0	2	0	2
Casualty department	1	0	1	2
	34	22	1	57

Bacteriological Investigations

During and after the epidemic, all β-hæmolytic streptococci found in the hospital were grouped, usually by Fuller's formamide method (Mackie and McCartney 1953) but occasionally by the bacitracin method (Maxted 1953). Those of group A were sent for typing to the

Streptococcal Reference Laboratory, Colindale. Types other than type 8/25 were occasionally found in both staff and patients, but there was no evidence of cross-infection by them. In contrast, a possible means of cross-infection was always demonstrable with type 8/25.

The presence of type 8/25 streptococcus appeared to be confined to the maternity unit, for nose and throat swabs taken from the patients and staff of other wards never showed the presence of this type.

Several attempts were made to demonstrate the presence of the streptococcus in the air and furnishings of the maternity wards. In addition to the use of a slit-sampler, swabs were taken from fittings and furniture, and streptococci of type 8/25 were found on a cot hammock and a lampshade.

There was no evidence that the organism was spread by milk or other food; the milk was supplied in bottles and all the many samples examined were negative. Streptococci from bovine sources do not multiply so rapidly in milk as human strains, provided that the milk is kept at or below room-temperature (Pullinger and Kemp 1937).

Administrative Action

The situation was reviewed several times by a committee consisting of the medical director, the physicians in charge of sick staff, the obstetricians and pædiatrician, the matron and sister-superintendent, the bacteriologist, and the senior administrative medical officer of the North West Metropolitan Regional Hospital Board. Representatives of the Ministry of Health, Prof. Robert Cruickshank, Dr. R. E. O. Williams, and the medical officer of health for Willesden attended later meetings by invitation. The committee recommended the weekly mass swabbing of all the maternity staff and the isolation of all the carriers identified, and their treatment with penicillin followed by sick-leave. Where necessary, the opinion of the ear, nose, and throat specialist was to be sought. The carriers were to be swabbed before their return to duty. The possibility of the staff housed in any particular residence being especially affected was to be investigated. At one the midwives were sharing bedrooms. This was stopped and the laws of hygiene, especially in relation to eating utensils, were applied more strictly.

On June 2 the committee decided that the only way of effectively controlling the spread of infection was to close the unit. Accordingly, no patients were admitted after 8 A.M. on June 5, and the expectant mothers who had booked for their confinements had to be accommodated in other hospitals, which coöperated generously. The whole maternity unit and its contents and the living quarters of the pupil midwives were then disinfected. This was done in stages. After disinfection of ward F1 all the maternity patients still remaining in the hospital were, with precautions against cross-infection, accommodated in it. The main block of the unit and its contents and the quarters of the pupil midwives were then disinfected. Later, after the discharge of the patients, ward F1 was disinfected again. All the infected patients had been evacuated from the unit before its disinfection and reopening.

On June 14 it was agreed that it would be safe to reopen the main maternity block on June 23 provided that none of the staff returned to duty until he or she had had four consecutive daily negative throat and nose swabs and was clinically healthy. The unit gradually filled up again, and there has been no clinical or bacteriological evidence of the return of type 8/25 streptococcus among either the staff or patients.

Disinfection

The unit was disinfected under the supervision of the local sanitary staff. The linen was relaundered. The blankets were autoclaved at 5 lb. pressure for twenty minutes. The furniture and the mattresses were exposed, the doors and windows sealed, and formalin vapour introduced either by spraying or by heating tablets. The rooms were left sealed overnight (see White 1936, Gibson and Calman 1953).

Discussion

Lancefield's precipitin tests for the alphabetical grouping of hæmolytic streptococci and Griffith's agglutination tests for their numerical typing have made possible the tracing of infections. In an outbreak all the individuals show the same type, and the finding of the same type in different individuals is strong presumptive evidence of the transference of the infection between them or to each of them from a common source.

In recent years clinical and bacteriological evidence has accumulated that puerperal infection may be produced by streptococci from medical and nursing attendants (Colebrook 1935, Browning and Mackie 1949). Smith (1931) demonstrated the serological identity of the strains recovered from the patient and the attendant. Once a puerperal infection has developed it may easily be spread by hands of the attendants and instruments to other parturient women. The streptococcus responsible usually belongs to group A but may be of group B or a non-hæmolytic or anærobic strain.

The versatility of a streptococcus in producing different clinical effects (Keevil and Camps 1937, Bradley 1938) was demonstrated here. This organism produced sore throat, blood infection, puerperal sepsis, wound infection (umbilical stumps), meningitis, osteomyelitis, and bronchopneumonia, but not erysipelas, impetigo, otitis media, or scarlet fever.

The absence of the scarlatinal syndrome suggests a low pathogenicity of the strain (see Wilson and Miles 1955). The absence of erysipelas and otitis media may be similarly explained, and the meningitis, osteomyelitis, and bronchopneumonia were all in very young infants. The occurrence of the scarlatinal syndrome probably depends on the ratio between the toxigenicity of the infecting strain and the antitoxic immunity of the hosts (Okell and Parish 1928, Okell 1932). There is no parallelism, however, between toxigenicity and invasiveness, and F. Griffith produced evidence of "epidemic strains endowed with a heightened power of spreading naturally among the population at risk" (see Wilson and Miles 1955). Hospital staff, through repeated exposure to streptococci, may acquire an antitoxic immunity above the average in the community and above that of their patients. This, however, was neither proved nor disproved, as the Dick test was not carried out on them.

Possible Modes of Spread

The transference of streptococci by droplets or droplet nuclei is probably rare, since very few streptococci are normally expelled from the throat during coughing (Wilson and Miles 1955). The site of origin is probably in the nose of the patients and carriers (Hamburger and Green 1946), though Loosli et al. (1950) showed that an infected ear or skin could be as big a menace as the nose. In this outbreak, however, the throat seemed to have been more important than the nose. Wherever the actual site, the probable means of transference was indirect contact with contaminated hands and handkerchiefs (White 1936, Hamburger and Green 1946). *Streptococcus pyogenes* has been frequently demonstrated on the hands of healthy people (Colebrook et al. 1935, Williams 1955); and Hare (1941) has shown that when they are in the throat they may contaminate the clothes, handkerchiefs, hair, and skin of the face and hands. An infected maxillary sinus can provide a continuous source of streptococci for the contamination of the air or hands (Asherson 1947). Aerial spread by contaminated dust is

very important. Hæmolytic streptococci have often, as in this outbreak, been demonstrated in the dust of wards containing patients with scarlet fever (Wilson and Miles 1955) and have produced cross-infections with the different types (Allison and Brown 1937). In dust, especially in the dark, streptococci can survive in a virulent state for weeks. In a linen cupboard, for instance, they may be exposed to the light for only a few minutes in the twenty-four hours. When such dust is stirred, the organisms contaminate the air of the ward and so cause infections, but the rising of the dust can be lessened by oiling the ward floors. Once contamination of the dust and furnishings of the ward has occurred it can be eliminated only by thorough disinfection of the whole ward and everything it contains, and this in turn necessitates the evacuation of the patients.

Masks can obviously inhibit the transference of streptococci; but if they are not disposed of immediately after use they will probably contaminate the hands, collar, &c., and so can be a source of great danger. It is often not realised that when a hand is raised to restrain a cough it becomes a vehicle for the transference of the infection.

Division of the lying-in accommodation into small rooms allows of grouping of admissions and airing of rooms between the groups. Such isolation, however, is not in itself enough to prevent cross-infection. It must be accompanied by careful isolation nursing (see Medical Research Council 1951). In the outbreak described here a great effort was undoubtedly made by the nursing staff to avoid spreading the infection, but unfortunately spread took place despite the use of the small rooms. There were several adverse factors. One was the circulating of the pupil midwives round the different sections of the unit. The rule allowing them to have only three days' sick leave during their six-month course tempts them to conceal a sore throat. The transference of patients from one ward to another may have entailed the carrying of the organisms. The unit works under constant pressure. The greater the turnover of patients, the greater is the chance of cross-infection, and the temptation to show a high bed-occupancy figure by converting to general use beds intended for isolation must be resisted. Had the streptococcus produced more severe infections than it did, the infections would probably have been recognised more readily and none of the patients would have reappeared as return cases. On the other hand, the morbidity and mortality among the infants might have been greater than they were.

Treatment

The infection among the patients invariably responded promptly to penicillin. In contrast, the staff (individuals showing clinical evidence of infection as well as carriers) illustrated how difficult it may be to eradicate pathogens from the throat. The inadequacy of sulphonamides in the treatment of sore throats, reported by Landsman et al. (1951) and MacDonald and Watson (1951), was confirmed, though these workers say that sulphonamides may help in the treatment of complications. Cook and Munro-Ashman (1949) say that penicillin may be of use in the early stages and that penicillin-sulphathiazole snuff will clear up most nasal carriers. A remarkable feature of our outbreak, however, was the absence of the streptococci from the noses of almost the whole staff. In spite of this, I believe that the nasal flora was important, and that the greater prevalence of staphylococci in the noses of the staff than of the patients explains the difference in response to penicillin between the two groups. Rountree (1955) drew attention to the association in surgical wounds of antibiotic-resistant staphylococci with streptococci. Although the streptococci were sensitive to penicillin, parenteral administration of that antibiotic could not be relied on to prevent their colonisation of the wound, because the staphylococci, being penicillin-resistant, produced penicillinase. The high prevalence of staphylococci in hospital staff therefore not only interferes with the treatment of their streptococcal infections by parenteral penicillin but also exposes them and their patients to the dangers of staphylococcal infection. In such circumstances, recourse may have to be had, as here, to streptomycin in addition to penicillin. The apparent stubbornness of type 8/25 in not yielding to orthodox treatment was probably not a feature of the particular strain so much as a result of its resistance to the sulphonamides and of the presence of concomitant staphylococci. Further, unless the tonsils are obviously chronically infected, their enucleation may not be indicated.

Applications of Bacteriology

The lessons of the outbreak are numerous. A throat of unimpeachable appearance in an apparently healthy young woman may yield a pure culture of a hæmolytic streptococcus. Bacteriological evidence must therefore be sought before determining isolation or return to duty. There should be standing orders that all staff should report sick if a sore throat or even only a cold develops. They should then be excluded from duty until swabs fail to show β-hæmolytic streptococci. If these are found, isolation of the staff at the earliest possible moment is essential to prevent spread of infection to their colleagues and patients. Before they return to duty they should yield at least two negative swabs at an interval of three days. The Medical Research Council (1951) suggests that when, owing to shortage, staff cannot readily be excluded from duty, anyone with a minor ailment who *must* remain on duty should be kept from contact with infant, maternity, and surgical patients.

In maintaining the health of the staff of a maternity unit a reasonable compromise must be reached between the clinician, who may be tempted to assess fitness for duty on purely clinical grounds, and the bacteriologist who may lay undue emphasis on the presence of a scanty weakly hæmolytic streptococcus in an otherwise normal throat flora. The clinician has to realise that streptococcal sore throat cannot be diagnosed clinically with any assurance. Landsman et al. (1951) found that among patients with sore throats, headache, anorexia, vomiting, sweating, chills, and rigors were commoner in those who harboured hæmolytic streptococci in their throats than in those whose throats were bacteriologically negative or contained scanty organisms. In the latter group, however, sneezing, rhinorrhœa, stuffy nose, and cough were commoner than the bacteriologically positive group. The outbreak here described emphasises what is even more important as regards cross-infection—namely, the potential menace of the carrier who is in apparently good general and local health.

The bacteriologist, in fixing the criteria for return to duty, has to remember the difficulties of the matron or sister-superintendent. If the clinicians accede to his request that all staff with colds as well as those complaining of sore throats be examined bacteriologically he should expedite his report so as to avoid delay in return to duty of the bacteriologically negative. On the other hand he must, if possible, not allow a carrier to have access to patients. This is probably more important in a maternity unit than in other parts of a general hospital, since the newborn are extremely prone to infection and may suffer extremely serious consequences if they become infected. The availability of antibiotics should not encourage any relaxation of the efforts to prevent cross-infection. The possibility of the infection of the staff of a maternity unit who have to travel daily by public transport is ever present, but at least Williams et al. (1950) have demonstrated the comparative cleanliness of the air in London underground trains.

In a big hospital when a throat swab is taken from one of the staff it is helpful to the hygiene officer (usually the bacteriologist) to be told as a routine in which part of the hospital the individual is working. This will give him the earliest possible warning of any potential source of infection among specially susceptible patients (such as the newborn), and he can decide if further identification of the streptococci is necessary.

Mass swabbings of throat and nose might well be an accepted routine for the staffs of maternity units, for the sooner a carrier is recognised and isolated the less likely is he or she to spread the infection. Each new draft of pupil midwives should be swabbed before they take up their duties. The work and inconvenience involved are a small price for the prevention of an outbreak such as that described here.

The outbreak illustrated the importance of complying with the elementary rules for taking swabs. These rules tend to be forgotten or neglected. Preliminary gargles and hot drinks should be avoided. Throat swabs should be taken with care to ensure that they are from the area most likely to yield pathogens. Some of the staff dislike having their noses swabbed; but the operation can be made easy by selecting small swabs, dipping them before use in sterile distilled water, and gently inserting them only a small distance into the nose. Swabs should not be left for even a few hours before being inoculated into media, since they may dry and the organisms die.

Summary

An outbreak of infection in a maternity unit with a β-hæmolytic streptococcus of group A is described.

Despite strenuous efforts, the organism spread among 55 of the staff and 57 patients. The vast majority either showed no evidence of infection or had only a trivial illness. 2 infants died: 1 was thought to have had a cerebral injury; and the other fell ill after discharge from hospital.

Eradication of the organism proved much more difficult in the staff than in the patients. This difference is thought to be due to the presence in the noses of most of the staff of penicillinase-producing staphylococci.

Once a pathogen has become widely disseminated in a maternity ward, it can be eliminated only by evacuating and thoroughly disinfecting the ward.

Any member of a hospital staff with a sore throat or cold should report sick, and should be examined bacteriologically.

Many members of the hospital staff played a part in the handling of this outbreak. They include Dr. H. Joules; Mr. J. S. MacVine; Dr. M. A. M. Bigby; Dr. J. Sakula; Dr. K. P. Ball; Dr. F. T. Page; Miss D. Waller, the matron; Sister N. Shipp; Mr. A. S. Collins, the hospital secretary; and the technical staff of the pathology department, especially Mr. R. A. Lambert and Mrs. G. Orgler. Extremely valuable help was also obtained from Dr. H. M. C. Macaulay and Dr. C. Muir of the North West Metropolitan Regional Hospital Board; Prof. Robert Cruickshank, of St. Mary's Hospital; Dr. R. E. O. Williams, of the Central Public Health Laboratory, Colindale; and Dr. S. Leff, medical officer of health for Willesden. To all these thanks are due for making possible this account.

REFERENCES

Allison, V. D., Brown, W. A. (1937) *J. Hyg., Camb.* **37**, 153.
Asherson, N. (1947) *Brit. med. J.* ii, 744.
Bradley, W. H. (1938) *Ibid*, ii, 733.
Browning, C. H., Mackie, T. J. (1949) Textbook of Bacteriology: 11th ed. of Muir and Ritchie's Manual. Oxford.
Colebrook, L. (1935) *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 205.
— Maxted, W. R., Johns, A. M. (1935) *J. Path. Bact.* **41**, 521.
Cook, G. T., Munro-Ashman, D. (1949) *Brit. med. J.* i, 345.
Gibson, J., Calman, R. M. (1953) *Ibid*, ii, 733.
Hamburger, M., Green, M. J. (1946) *J. infect. Dis.* **79**, 35.
Hare, R. (1941) *Lancet*, i, 85.
Keevil, N., Campe, F. E. (1937) *Ibid*, ii, 207.
Landsman, J. B., Grist, N. R., Black, R., McFarlane, D., Blair, W., Anderson, T. (1951) *Brit. med. J.* i, 326.
Loosli, C. G., Smith, M. H. D., Cline, J., Nelson, L. (1950) *J. Lab. clin. Med.* **36**, 342.
MacDonald, T. C., Watson, I. H. (1951) *Brit. med. J.* i, 323.
Mackie, T. J., McCartney, J. E. (1953) Handbook of Practical Bacteriology. Edinburgh.
Maxted, W. R. (1953) *J. clin. Path.* **6**, 224.
Medical Research Council (1951) Memorandum no. 11 (revised).
Okell, C. C. (1932) *Lancet*, i, 761, 815, 867.
— Parish, H. J. (1928) *Ibid*, i, 748.
Pullinger, E. J., Kemp, A. E. (1937) *J. Hyg., Camb.* **37**, 527.
Rountree, P. M. (1955) *Lancet*, i, 172.
Smith, J. (1931) Causation and Source of Infection in Puerperal Fever. H.M. Stationery Office.
White, E. (1936) *Lancet*, i, 941.
Williams, R. E. O. (1955) Cited by Wilson and Miles (1955).
— Hirch, A., Lidwell, O. M. (1950) *Lancet*, i, 128.
Wilson, G. S., Miles, A. A. (1955) Topley and Wilson's Principles of Bacteriology and Immunity. London.

ADDENDUM

After this paper was prepared there was a remarkable absence of streptococcal infection in the maternity unit until May 27, 1956, when a patient ready for discharge after delivery developed a slight pyrexia which yielded to penicillin. Her vaginal swab revealed the presence of β-hæmolytic streptococci, group A, type 8/25. Two days later the same organism was isolated from a pupil-midwife who had developed a sore throat and from a second patient with pyrexia. The pupil-midwife's throat yielded rapidly to crystamycin and the patient's pyrexia to penicillin. Strenuous efforts failed to demonstrate a nidus in which the organism might have been dormant since the main outbreak ten months before.

HYPERCALCÆMIA IN INFANTS

THE British Pædiatric Association has now issued the report (dated July, 1955) of a subcommittee [1] set up at the request of the Ministry of Health to consider the incidence of hypercalcæmia in infants, and the intake of vitamin D.

The committee recall that a previous report from the association in 1943 said:

> "A daily allowance under the Government scheme should be sufficient to protect practically all babies under the varying circumstances of their lives, without further addition of Vitamin D obtained through private channels".... "Although a daily intake of 500 I.U. would probably protect the majority of full-time infants and young children, a daily allowance of 700 I.U. would give a wider margin of safety."

That report concluded that "the full dose" should be 700 I.U. in the case of infants born at full term. When these recommendations were made, the fortification of infant foods with calciferol had not become a standard practice.

The committee wrote to 196 consultant pædiatricians in the United Kingdom, and by the end of June, 1955, they had heard of 204 cases of hypercalcæmia recognised since the beginning of 1953. The peak incidence of onset of symptoms was between four and eight months of age. There was no convincing instance of the onset of the condition in an infant which had been entirely breast-fed, without any vitamin-D supplement.

There is a fall in the calciferol content of infant foods and milks during the months after it is issued—the fall being probably considerably less in the case of milks than in cereals. In September, 1953, the Ministry of Food recommended manufacturers of National dried milk to add 500 I.U. of vitamin D, as calciferol, per dry oz., so as to allow for a maximum deterioration of 44%, thus giving a minimum of 280 I.U. per dry oz. in the food as marketed.

The following table shows the amounts of crystalline calciferol added to a proprietary brand of full-cream dried

1. The members were Dr. REGINALD LIGHTWOOD (chairman), Dr. WILFRID SHELDON, Dr. CHARLES HARRIS, and Dr. THOMAS STAPLETON (secretary).

milk, the sales statement as to the vitamin-D content, and reports of assays of vitamin D in the milk :

Date	Calciferol added (I.U. per dry oz.)	Date	Stated to contain not less than (I.U. per dry oz.)
Up to :			
August, 1942 ..	70	..	..
From :			
August, 1942 ..	128	1943	Increased to 280
October, 1943 ..	403	Late 1943	320
November, 1944 ..	460	..	..
October, 1954 ..	690*	..	..

* This was not yet on the market.

Age of milk (months)	Assays	
	Year of manufacture	I.U. per dry oz.
7–12	1950	362
		463
13–18	1952	405
3–6	1952	560

The assays are by a biological method : error ±30%.

It will be seen that the sales statement—i.e., the statement on the label—refers to the minimum level of vitamin D in the dried milk. If there is not much deterioration in a particular batch, or the milk powder is retailed soon after manufacture, the level will be higher.

A more dilute, or " half-cream " milk, was made by adding lactose to the calciferol-fortified full-cream dried milk, referred to in the above table. The concentration in the full-cream milk ensured that there was enough vitamin D in the more dilute milk.

The following table shows the amounts of calciferol added to a dried cereal, the sales statement, and reports of assays.

Date	Calciferol added (I.U. per dry oz.)	Stated to contain approx. (I.U. per dry oz.)	Assays	
			Age of food months	I.U. per dry oz.
Up to :				
March, 1946 ..	1000	625	..	..
From :				
March, 1946 ..	2000	1000	0–2	1110–1870
			13–18	758–1200

Thus in a fairly recently prepared batch of cereal, there may well be 1500 I.U. vitamin D per dry oz., or even more.

The above figures permit an approximate estimate to be made of the likely intake of vitamin D of an infant fed on the full-cream dried milk, referred to above, fortified with crystalline calciferol 460 I.U. per dry oz., and the calciferol-fortified cereal shown above, together with the generally recommended quantity of cod-liver oil compound. For example, the vitamin-D intake of an infant who receives each day

	Approximate figures (I.U.)
(*a*) 1½ pints of a full-cream dried milk containing 460 I.U. vitamin D per dry oz.	1725
(*b*) 1 oz. of a cereal containing 1500 I.U. vitamin D per dry oz.	1500
(*c*) 1 teaspoonful of National cod-liver oil compound (welfare food service)	700–800

would be about 4000 I.U. " Clearly it is important that agreement should be reached on what should be the optimum intake of vitamin D from all sources in the infant's diet," and the committee thought that " there is a strong case for taking steps to safeguard infants against the possible risks of an unnecessarily high intake of vitamin D." They concluded by discussing ways in which vitamin-D intake could be controlled.

THE REMUNERATION CLAIM

As stated in the medical press a fortnight ago, an outline of the case for an adjustment of the betterment factor for general medical practitioners and all grades of hospital medical staff in the National Health Service was recently sent to the Minister of Health and the Secretary of State for Scotland. The full text will be issued next week.

The following reply, dated July 13, has been received by the secretary of the Negotiating Committee from Sir John Hawton, permanent secretary of the Ministry of Health :

Dear Dr. Macrae,

On 14th June you wrote to me, and to the Secretary of the Department of Health for Scotland, enclosing a memorandum outlining the case which the Negotiating Committee wished to present to the Minister and the Secretary of State for Scotland, concerning remuneration.

The memorandum has been submitted to the Ministers.

We are asked by them to say that they do not accept the premises on which the memorandum is based. In their view the remuneration of the medical profession, like that of others, must be determined from time to time in the light of all relevant circumstances. The Ministers have asked us to say that in present circumstances they would not feel justified in giving consideration to any claim for a general increase in medical remuneration. In view of this they feel that the Negotiating Committee may wish to defer sending their proposed deputation at the present time.

Yours sincerely,
(Sgd.) JOHN HAWTON.

The following statement has been issued on behalf of the Negotiating Committee :

The doctors of the country will be astonished by the flat rejection of a claim which in justice and logic cannot seriously be challenged. The medical profession have borne without complaint the steady decline in the real value of their incomes during the past five years, even though some of them are suffering hardship, and during recent years have refrained from adding to the Government's difficulties by putting forward a claim. This year the profession were at last driven to request an adjustment. The Minister's curt dismissal of that request will shock the profession, and will be regarded as a poor recognition of the restraint they have shown.

The claim is based on the decline in the value of money since April 1, 1951. The claim is that the remuneration of all members of the medical profession whose case is covered by the two Spens Committees (General Practitioners and Hospital Medical Staffs) should, as at April 1, 1956, be increased by not less than 24%, which is the amount by which their real incomes—taken as a whole—have declined in value since 1951.

The claim in no way runs counter to the recent plea by the Chancellor of the Exchequer for a halt in new wage and salary claims, for the simple reason that the claim is merely one for the implementation of a contractual obligation already in existence and which has been so since 1948. Having entered the National Health Service at the Government's invitation, the medical profession inevitably and for all time thereafter entrusted to the Government the maintenance of its economic status. The discharge of that trust is a responsibility that was undertaken by Parliament and the nation as soon as the National Health Service was established.

The Negotiating Committee is meeting at once to consider the action it must take.

The Wider World

PUBLIC HEALTH IN RUSSIA

C. FRASER BROCKINGTON
M.A., M.D. Camb., D.P.H.
PROFESSOR OF SOCIAL AND PREVENTIVE MEDICINE IN THE UNIVERSITY OF MANCHESTER

THE Russian medical scene, already described by a number of able observers,[1] still lacks detail. This is especially true of public health, which the group of which I was a member wished particularly to examine. In the result little new was added. The Russian "delegation industry" is well organised. The delegation is shepherded by carefully chosen interpreters through the show places. The days, already limited,[2] are filled with organised visits of business and pleasure, and the opportunities for leaving the beaten track are few. Objective study of social conditions is hindered by lack of factual information about mortality and morbidity, population, housing, sanitation, and social stratification.

Nevertheless, anyone with a public-health background, however much he may be kept in blinkers, is able to look around; and he can occasionally break away and see for himself.

Social Conditions

The Russian social structure is—at least in the material sense—not unlike our own. A small group of privileged people, continually renewed from below, live at comparatively high standards, while the bulk of the people obtain all that is necessary for their basic needs and much that can be regarded as luxuries. Britain and Russia seem thus, in their different ways, to have reached a common goal. But the British Welfare State offers greater safeguards in many of the essentials, since its benefits are not tied to work. The British system of maternity grants, school meals, children's allowances, and care for the aged, for example, is superior to the Russian.

In Russia an immense effort is being made to provide all the public buildings necessary for a modern State—theatres, railway stations, aerodromes, libraries, municipal buildings, parks, and recreation centres; universities and schools; hospitals, maternity homes, policlinics, and medical holiday homes. So much has now been done that the cities present a new face, neo-classical in style. There is more in this than a superficial resemblance to ancient Greece. The Russian State is adorning itself with magnificent buildings in which all participate. The people may live in hovels, but all share in the new Underground, the Gothic skyscraper that houses the Moscow University, the new theatre at Sochi with 200 Corinthian columns, and the planetaria—just as the Athenians gloried in the Acropolis.

Behind this great building effort lies an immense and unmeasured array of Asiatic housing. The building of blocks of flats, and other devices such as the construction of homes for the workers by industry, has done little more than touch the fringe of the housing problem. Moscow, a city of perhaps 7 million,[3] has a concentration of living which few large cities could equal. Dense overcrowding is almost certainly universal in Russia.

Except in housing, the standard of living gave an impression of reasonable adequacy; judged by the interior of the homes it was seldom less than that of an artisan or foreman in Britain, though very much more restricted in diet, clothing, and some other amenities. The income of the individual worker seemed to be insufficient in itself, but the number of families dependent upon a single wage-earner is probably smaller in Russia than in Britain. Working wives, and often other members of the family in the crowded single-room homes, raise the total income above the poverty line. A low rent, amounting to about 5% of income, leaves a high proportion of the total earnings for current expenditure. In recent years prices have been falling. Poverty exists, and is probably more prevalent than in Britain, owing to the close relation of rewards to work. (A man who had lost both legs below the knee said that he was getting a pension of only 109 roubles a month. The begging mother of 7 children—with two Stalin medals for fecundity—provided a sharp contrast with the Welfare State in Britain.) Above the general minimum level there are wide variations in income, dependent not only on the numbers working in the family but also on preferential treatment for certain occupations. The coalminer's basic wage of 2000 roubles a month can be increased to 7000, whereas the possible range of a doctor is generally between 800 and 2000.[4] In five visits to patients with the sectional doctor from the policlinic the income of the household was always greater than that of the doctor. The doctor in this case was getting 1080 roubles a month five years after qualification. The low payment to doctors generally in relation to many other workers is a striking feature of the Russian as it is of the Yugoslavian scene.

The interiors of all the houses that I saw were well appointed. In terms of the squalid buildings—and much that I saw was no better than a hen-house—this was remarkable. Even a grossly overcrowded single room was clearly a home. Both in those selected for a visit and in those entered without the knowledge of the guides, there were ornaments, pictures, carpets on the floors and walls, ferns, embroidery, wireless, and often television. The agreeable interior effect contrasted with the drabness outside, where everyone looked what one might call working-class. It is not difficult to believe that in recent years standards have risen; but there is little doubt that great shortages remain.

The Emancipation of Women

Russian society is conspicuous for the completeness of its emancipation of women. Great numbers appear to enter professional life. Aided by wide provision of nurseries—which are themselves an important element in Russian culture—a high proportion of women work outside the home, many in occupations which in Western culture are the prerogative of men. Marriage is undertaken early. We received conflicting accounts of its stability, but it may well be no less stable than in Western culture. The family is now again extolled, and abortion has been placed on the same basis as in our own society.

In Uzbekhistan emancipation seemed to be as complete as elsewhere. The Islamic has been replaced by the Communist faith. In Tashkent the mosque has received no better treatment than the church in Moscow. Three older women in a Tashkent school—a cleaner and two canteen workers—told me that they no longer believed in "all that nonsense." Whatever may be the religious significance of this, the effect on the social structure seemed to have been beneficial. The distressing shortage of nurses and other professional women, which is so

1. Braithwaite, E. G. *Munic. J. Lond.* Nov. 19, 1954, p. 2860. Fox, T. F. *Lancet*, 1954, ii, 748, 803. Sigerist, H. E. Medicine and Health in the Soviet Union. New York, 1947. Lazarévitch, I. La Médicine en l'U.R.S.S. Paris, 1953.
2. I arrived in Russia from Bucharest on Sept. 9, 1955, and left Moscow for Vienna on Sept. 26, spending 6 days in Moscow, 3 in Tashkent, 1 in Samarkand, 3 in Sochi, and 1 in Stalingrad.
3. The last census was taken in 1939.
4. Doctors in university posts fall into a small privileged group of highly paid people.

prominent a feature of Turkish life, was absent. There is no difficulty, we were told, in getting recruits for the Tashkent School of Nursing. In a district maternity hospital the labour was always attended by a doctor and a midwife, both women. Of the 75 doctors only 5 were men.

Police and Dogma

What effect has the police State and Soviet dogma on the Russian mind, and how (if at all) has this affected the public health? The Russian mind seems to be clamped in a vice. Much that you see around you appears to be designed to influence thought and conduct without too close examination of all sides of the question—indoctrination. Education has now been extended so widely that illiteracy no longer insulates the mind from these powerful influences which confine the spirit within the walls of Soviet dogma. Posters, slogans, museums, and statuary all talk the same language, and it is not that of liberal thought. But much of the suggestion, if not of a religious character, has a spiritual basis.

One of the side-effects of the régime is a sort of puritanical atmosphere, as if there were to be no more cakes and ale. Forward to better things is a motif constantly before the traveller. It is a purposeful people, and lax behaviour, whether sexual or otherwise, is officially frowned upon. The hundreds and thousands of Corinthian columns speak only of solid endeavour—though they are in fact of brick with a stucco coating. The impression which this makes on the traveller is both profound and vaguely disturbing: it seems too good to be true. Yet one has the feeling that this is not a puritanical repression so much as a sublimation of feeling. Against the background of fear which must operate in so many lives, it is an absorbing phenomenon.

Is the new faith of the Communist dogma, which has replaced other beliefs, satisfying? Does it lead to happiness? Does any questioning produce conflict? Does the substratum of fear lead to anxiety? These questions cannot be answered except by long and intimate contact. But, at least superficially, neither the limitation of the freedom of the spirit nor the physical restriction appeared to lead to dissatisfaction, unhappiness, anxiety, or conflict. A few wistful references to the freedom of travel which we enjoyed—but otherwise nothing except absorption in Russian affairs. Perhaps universal conformity, with an unwavering devotion to the cause has psychotherapeutic effects which the free world cannot enjoy. Perhaps it is the antidote to the overcrowded hovels, tedious queues, and shortages which are the trials of daily life in Russia. Perhaps it explains how the many doctors, and other health workers, do limited and narrow forms of work without complaint.

The friendliness of the Russian people remains unaffected; their charm is a lovable quality. Even in the worst hovels of a converted church, or underground rooms of an old Russian log-house, the whole family welcomes the arrival of a stranger. There may be five persons in a room 10 ft. by 6 ft. but the radiating warmth of your reception makes you forget it.

Social and Preventive Aspects of Russian Medicine

The structure of the Russian health services is monolithic. From the central point at Moscow to the most distant regions of the Union there seems to be a uniform pattern, and it is difficult to conceive of the sort of individualistic experiment which has been the characteristic of British services for a century. On the other hand, though a tight bureaucracy must exist, I got no impression of dictatorial management, of warring personalities, or of obsequious deference. Relationships between the different members of the team had a most friendly and informal character. Once again the thought comes to the mind that this remarkable scene of *bonhomie* in the midst of autocracy stems from the acceptance of the Soviet faith and the virtual elimination of individualistic thinking.

The service appears efficient; it seems to provide the great bulk of the people with a sound system of medical care; it is highly preventive. Even in the absence of any worth-while figures of mortality and morbidity there is little doubt that the characteristics of an underdeveloped country have been replaced, generally speaking, by those of a developed one. On the other hand the health service does not seem to contain the vital sparks of creative thinking needed to keep it alive. For its growth and development Russia may now be parasitic on the Western world, absorbing the new ideas to which the free and unfettered spirit gives birth.

Within this framework medical science seems to have been supplied to the whole of the Russian subcontinent rather in the way that one provides gas or electricity. Probably from the outset, the creation of health has been regarded as no more than a technical exercise. For this operation, naturally, doctors and auxiliary workers are needed in great numbers and the visitor to Russia in 1955 finds that the 81 medical institutes (separated from the universities) and the 650 "middle" medical schools have worked at full bore to produce the doctors and also the feldshers (whose four-year training qualifies them for sanitary or veterinary work and for midwifery or nursing). Once again we heard the grand total—300,000 doctors (1 to 720 persons) and 800,000 auxiliaries—and we had no doubt of its truth. Rather did we soon wonder how even this total could meet the lavish use.[5] On the other hand, it is often not easy to see exactly what each doctor will do with his or her time, even allowing for the short working day (variously given as 6 and $6^1/_2$ hours). The interests of the doctor himself as a professional person, and the more subtle influences which come into play when highly trained people are used in mundane tasks, appear to have been ignored. But this may not be so important when doctors are technicians.

The decision to develop, as a basic unit of curative and preventive medicine, a standard pattern of clinic, for use everywhere throughout the Soviet Union, was of great significance. This is the policlinic, of which three distinct types exist—one for children, one for the industrial worker, and one for other adults. Russian health services have been built around the policlinic.

The policlinic can fairly claim to be a health centre, and its nearest equivalent is perhaps the section 21 health centre of our National Health Service Act. But there are many points of dissimilarity. The Russian policlinic does a large part of the outpatient work of the British hospital system, using a type of specialist midway between our general practitioner and consultant.[6] Moreover it lacks the family doctor in the sense understood in Britain of a physician to the whole family selected from several, almost always at hand, and a constant source of support. The Russian sector doctor, working a short day shift, cannot be so freely available; there can hardly be any freedom of choice; and the

5. In a large hospital (1680 beds) in the Stalin district of Moscow there was 1 doctor to about 10 beds (180 doctors); in the maternity hospital in Tashkent (450 beds) there were 75 doctors. In a children's sanatorium in Tashkent (belonging to the railway workers union) there were 20 doctors for 265 beds. The Stalin Collective Farm hospital of 60 beds had 10 doctors. The Tashkent Textile Combine employed 172 doctors, including a whole-time doctor in its night hostel for workers.

6. Specialists of the lowest grade have had no more special instruction than that gained in the sixth (and last) year of their undergraduate training.

children and workers are cared for in different clinics. But it is doubtful whether these fine distinctions mean anything to the ordinary Russian citizen. For him the Russian policlinic does take the place, fairly effectively, of the British family doctor. Usually one doctor is concerned with the patient; patients can expect continuous attendance except for emergencies dealt with by the emergency squad; they can telephone to make appointments. The people in the area of a policlinic look upon it as a source of health and strength.

With a profusion of doctors, and auxiliary workers, the Russian medical services have been developed with a strong bias towards social and preventive medicine. The training of the doctor distinguishes early (from the beginning of the fourth year) between those who wish to enter general medicine, pædiatrics, and public health; but for all three groups the content of public-health teaching seems high.

The medical officer of health, as known in Britain, Western Europe, and some other places, does not exist in Russia. In the machine of Russian health services there is no room for this hardy centenarian, with the inquiring mind and independent philosophy; and post-graduate training comparable to that of the British D.P.H. or American M.P.H. is not given. There is, however, a small army of doctors engaged in sanitary and epidemiological work—hygiene in the 19th-century sense. Under the general title of sanitary inspector they operate from sanitary and epidemiological points in towns, policlinics, and factories. Alongside them sanitary and veterinary feldshers are working in even greater numbers. Moscow has given the order to scour clean the Russian landscape. The task is uphill, as in all under-developed countries with a defective environment and little understanding of the principles of health promotion. But the powers of the medical sanitary inspectors are considerable, and their work is beginning to bear fruit.

Public-health doctors are also engaged in large operations to eliminate the major plagues—malaria, trachoma, tuberculosis, and others.

In Uzbekhistan, for example, a gigantic scheme of malaria control employed 500 doctors, 1500 medical auxiliaries, and 4000 voluntary workers. The Institute of Tuberculosis in Tashkent supervises the work of 30 X-ray plants and 12 mobile units. In 1954 1 million out of 7 million people were radiographed. The service employs 550 tuberculosis officers and 980 auxiliary workers with 35 dispensaries. All students, collective farmers, and workers in heavy industry are radiographed yearly. B.C.G. vaccination is given at birth and at 3, 7, and 10 years of age. Cattle are said to be seen monthly by veterinary feldshers, and since 1938 there has been a rigorous policy of skin testing and slaughtering.

Preventive medical techniques have been applied on a vast scale without any of the inhibitions which hold up the work in a free society. These undertakings are aided by a lavish provision of medical institutes all closely related with central institutes in Moscow. Health education within the general scheme of indoctrination with Soviet faith is used with considerable effect. It is, for example, plain that the aseptic ritual now encouraged in many different situations is being accepted (ice-cream wafers dispensed by street vendors are handled with tongs).

Furthermore, much of the time of doctors trained for pædiatrics or general practice is spent in work which can properly be regarded as preventive. The numerous "specialists" in the policlinics—especially the children's policlinics—give a lot of their time to preventive examination. The effect may not exceed the joint efforts of our general practitioners, maternity and child-welfare doctors, school doctors, and health visitors; but infant and child-welfare work, including the many preventive inoculations and vaccinations and the routine medical examination, probably gains by its linkage in a comprehensive service with the care of the sick and ailing child.

Some of these techniques have been extended to adults. In a Tashkent cotton factory it was said that every worker was examined once a year, and those in dangerous trades twice a year, by a team of doctors from the policlinic. A policlinic in Stalingrad used the same team method to examine all the workers of a section of the town twice yearly. This form of "dispensarisation" is said to be general throughout the Soviet Union. The team consisted of five or more "specialists"—e.g., a therapist, a surgeon, a gynæcologist, a neurologist, a dentist (or stomatologist), and an ear, nose, and throat surgeon. The work was done in the factory itself with facilities for X-ray and laboratory work and about 40–50 persons were examined daily, with what thoroughness I found it difficult to determine. We were told more than once that one effect of this "dispensarisation" was that fewer people seek consultations at the policlinics. The system is also designed to deal with the follow-up of cases and their rehabilitation, the hospitals communicating their findings and recommendations to the policlinic. If this really works, it might be more effective than our own somewhat haphazard arrangements for aftercare.

The work of the general practitioner, or sectional doctor, seemed also to have a preventive bias. He or she is expected to spend half of a six-hour day at the policlinic and half in visiting the section. When visiting, the doctor is expected to see the chronics, to ask about people in the family or in other families in the neighbourhood who may be in need of medical care, and to give lectures in factories and apartment houses. But the sectional doctor did not seem to visit houses without a specific reason, nor did he pay particular attention to the social aspects of disease. The five minutes of a twenty-minute visit which was used in a general inquiry into family problems seemed to reflect on the whole little more than a rather more leisurely approach to clinical medicine than is possible in Britain.

Schemes for the priority classes are in some ways more detailed than in Britain, and in others sadly lacking. The most obvious deficiency is in the absence of care for the aged. But, like other visitors, we did not see many aged people; and perhaps Russia has yet to experience the impact upon public health of an ageing society. School-children are examined annually by school doctors, who are on the staff of the children's policlinics—an effective link with active medical care. The school doctor also gives part of her time to actual teaching in the classroom.[7] Children benefit from a generous provision of holiday camps and sanatoria, to which about 5 million go annually. On the other hand, in a country where the diet approximates more to that of underdeveloped countries, with an excess of carbohydrate, the absence of any general scheme of school feeding is a serious defect. At least in the larger industries, the industrial worker is clearly subject to more rigorous examination, and his environmental hazards are under closer supervision than in Britain. Nevertheless with a system of work or starve there may well be hazards in Russian industrial life which a more humane society would avoid. The widespread development of sanatoria, rest homes, and other prophylactoria, which are one of the most striking features of the Russian scene, will certainly

7. In a Tashkent school of 1200 children, mainly from a collective farm, the school doctor gave three to four hours to the school daily and spent two-thirds of her time in classroom teaching. The same school had a primitive privy, to which flies had easy access, and no washing arrangements.

help to maintain the health of the worker [8]; but on balance I doubt whether this system is any more effective than the seaside resorts and caravan holidays of a free society, in circumstances where the family can enjoy themselves together.

The need for mothers to work, and the influence of the widespread use of nurseries for the young infant, call for more attention than we were able to give. Perhaps "deprivation" of maternal care is of less significance when it is the general lot. The provision for mothers in childbirth seems to be of a high order: in the Tashkent district maternity home, not only was every delivery attended by both a doctor and a midwife, but the staff had ample time for antenatal work and for the teaching of physiological delivery. Much was made of preparation for childbirth, and a high proportion of mothers appeared to attend for special talks.

In a sense the whole of Soviet society is an exercise in social medicine. This is particularly noticeable in the way in which committees of citizens deal with welfare, care, and aftercare. Stalingrad has 401 "street committees"—local committees of citizens—in streets, blocks of flats, and other units. These undertake social-welfare work under the direction of a committee of the Stalingrad council, with a prominent member as chairman. They are responsible for sanitary matters, for taking steps to see that those in need of care get it, for work in connection with problem families and marital disharmony, for following up school-children (in collaboration with parents' committees) and much else. This organisation was described as a most important agent in promoting community health.

Many other forms of committees of citizens are involved in one way and another—e.g., trades-union committees are called in by magistrates to help in marriage rehabilitation. Committees of parents appear to be active in schools. Stalingrad has begun health committees in policlinics and other centres to undertake practical health work. As examples of their tasks we were given (1) an investigation of school meals in the area of the policlinic, (2) collaboration in a scheme for preventing the introduction of poliomyelitis by traffic along the Volga, and (3) conducting a campaign to abolish flies.

To gain a true understanding of this participation of Russian peoples in their own problems of health and welfare would require far more study than we were able to give. The oft-repeated statement "we have no social problems" may mean no more than "we try to deal with our social problems ourselves without establishing outside agencies and introducing specially trained workers." But this is only an impression.

Health in Russia

One cannot speak definitely about the state of health of the people. Statistics, other than percentages, are notoriously difficult to obtain in Russia. Basic information on population and mortality is centralised in the central statistical bureau under the Council of Ministers; but, apart from the fact that there has apparently been no census since 1939, information does not seem to be made available to the ministry of health or to health departments. The ministry told us that they had begun a scheme for obtaining returns of morbidity from all policlinics, feldsher points, and hospitals throughout the whole Union; but this did not seem to be more than in embryo form. The only actual figures we received for population or mortality concerned the natural increase of the population (3–3½ million per annum), the crude death-rate (8·9 per 1000 of population), and the maternal mortality (0·08 per 1000 postnatal [9]). Generally the vagueness seemed to be due to a lack of statistical studies, indeed of any statistical machine whatever. When information was sought at the ground level it was said to be higher up. Specific inquiries, if pursued, always led to Moscow; but when ultimately we saw the deputy head of the statistical bureau of the ministry of health in Moscow, we were told that the details could only be given locally, or alternatively that figures for population and mortality were dealt with by the central statistical bureau.

We were given some general information which often had little value. Moscow, where people live as in a rabbit-warren, was said to have no overcrowding, everyone having 9 sq. metres of floor-space. Food-poisoning did not exist, nor prostitution or venereal disease.

Clearly, great improvements have now taken place in the state of Russian health, though they cannot be measured. It is not impossible that maternal and child mortality are now no greater than our own. Children are alert, vivid, and keen; they are blithe and gay. They crowd around the visitor in frank and disarming curiosity. But, as we have learnt in Britain, it is easy to be misled in the absence of detailed records. The diet for both adults and children is almost certainly low in protein and there seem to be no measures of priority feeding. Nevertheless, improvements are likely to have been particularly marked in nutrition. Rickets, for example, which (together with osteomalacia) was very common before the Revolution, is now rare in Uzbekhistan, in contrast with its high prevalence in Turkey. We were told, for example, that rickety pelves have become rare (only 2–3 a year in 7000 births in the Tashkent district maternity home), and this fitted in well with the low forceps and cæsarean delivery rates (only 20 forceps and 11 cæsarean section). The main lethal pandemic and epidemic infections have probably been reduced to somewhere near the levels now seen in Western Europe. The position of typhoid seems to be not unlike our own, and widespread inoculation, once practised, has been abandoned as no longer necessary. The decline in tuberculosis is also likely to have been big, despite the continuance of overcrowding; and, since a quarter of 4342 sanatorium beds of Uzbekhistan were empty it is possible that the picture of tuberculosis in Russia now resembles that in Britain.

In a state of full employment primary poverty is probably only slightly more than our own. Drunkenness is, I suspect, a greater problem than in Britain. We could get no information about suicide-rates. The oft-repeated claim that prostitution has disappeared, and that child delinquency and crime are hardly to be seen, cannot be accepted without access to records which we were in no position to obtain. But the prevailing atmosphere of restraint and conformity, which has followed long years of restrictive measures, may well be developing novel social patterns. I was left with a strong impression that the atmosphere of the Russian State does something in itself to reduce the social problems, which are a common component of our own disease picture. The driving forces of Soviet faith and dogma, the life of conformity, and the absence of individual choice, may lessen conflict, reduce neurosis, and prevent psychosomatic disorders. This may be easier to accept if we look upon the Russian peoples as the survivors of a great pandemic, which for thirty-five years has tended to eliminate those whose vaccination with Soviet beliefs has not taken. Possibly part of the price to be paid for liberty is social problems, crowded surgeries, and swollen outpatient departments.

8. 5 million persons yearly spend a month in 2500 sanatoria and 1000 rest homes, many of them on the Black Sea coast.

9. This appears to mean complications of the puerperium possibly equivalent to items 680–688 in the Registrar-General's presentation of maternal mortality: these complication cause only a small part of the total mortality. (In 1953 in England and Wales 0·12.)

In England Now

A Running Commentary by Peripatetic Correspondents

CMD. 9780 *

Said Limerick to Salisbury "My Lord,
The strontium 90 we hoard
Is too near by far
To 200 r.
Thermonuclear bombs are abhorred."

* * *

Each generation has its own habits for vacational occupations—evidence of an evolution at work.

The student member of our family has a job in a hotel where his "steady" is also employed as a holiday waitress. The hotel manager, who is obviously *au fait* with the fashions of the young, advertised for a male and female student. In the '20s the male student, when in funds, would forgather in the local and quaff his half and a chaser amid much talk about the fair sex on whom he tended to bestow his favours indiscriminately and at odd intervals. Nowadays the freshers pair off at an early stage and remain in the "steady" state for a shorter or longer period. They can be seen walking hand-in-hand around any university. Oxford and Cambridge are, of course, exceptions—they retain their bicycles along with the monastic tradition.

The second male member of the family is doing a month at an Outward Bound school, rather reluctantly as they do not pay wages. The interesting point about this is that if the school is within the education authority the course of four weeks plus rail-fare costs £2. Outwith the authority the unfortunate parent is £40 poorer. I paid the £2 with pleasure.

The third member, a teen-age female, neither delicate nor gently nurtured, has joined the tattie-howkers. She returns each evening with £1 0*s.* 7½*d.*, a haversack of potatoes, and a considerable quantity of the potato field about her person. The merchant buys the crop from the farmer and it is his job to recruit and pay the workers. The boss strides up and down the field, rather like the slave-masters of olden days, exhorting the workers to further effort in the sort of simple language they can understand. In these days when Jack is as good as his paymaster, this evokes replies in like terms, and my daughter has become disconcertingly proficient in these field responses.

The twelve- and ten-agers have up to the present been unable to fit themselves into the local labour market, but the seven-year-old has a part-time job from 3 to 5 P.M. at our local seaside café clearing the outdoor tables. He is paid in cones, lollipops, or chocolate bars according to his daily preference. Even H.M. Commissioners of Inland Revenue might find it difficult to suggest the appropriate schedule for this return.

* * *

The *News Chronicle* (July 6) has described as "one of the phenomena of modern times" the "near-deification of the doctor." So that's what has made life so confusing since I qualified. When the patient faces me in the surgery he doesn't see me as I am; my face is disguised by the encircling halo.

One evening I locked up the surgery and hurried to the bus-stop, where I re-joined the patient I had just seen and examined.

"'Ello!" he greeted me. "I thought I was the last one."

"Oh?" I said.

"What do you think of that young doctor?" he asked. "I think he's very clever. I've been to see all sorts of specialists at the hospital, and they all say there's nothing wrong with me except nerves; but *he's* given me some medicine." He brandished the prescription for mist. acid. acetylsalicyl. which I had written two minutes previously. "What have *you* been to see 'im about?"

"Oh," I said. "Er n-nerves—due to overwork I think." He scrutinised my face. "Ah! Very likely," he agreed, nodding solemnly.

This near-deification concept also explains why my prestige seems to drop to zero when someone who doesn't know I'm a doctor is talking to me.

I was walking across the courtyard of a large hospital when I was hailed by a lady in an enormous car. I had my white coat on all right, but had absent-mindedly put down my stethoscope somewhere. The lady shouted: "Can you tell me where the laboratory is, my man?"

"Which laboratory do you want, madam?" I asked politely.

"I don't know, but I'm in a hurry, so will you direct me as quickly as you can."

"I think you'd better ask at Inquiries, madam."

"Look here," she said, "I haven't got time for that. I'm a doctor."

"Oh," I said. "In that case . . ." and I directed her to the W.R. laboratory.

Of course I see it all now. She wasn't really a doctor at all. But she'd heard about this near-deification stuff, and was exploiting it. Probably she was securing orders for test-tubes or guineapigs.

* * *

The annual outing of the Valvular Society on June 30 was a great success. Not only many eminent men, but also a good number of students were among us, and it was noticeable how attractive had proved the special rates offered to those from Barts and King's.[1]

We spent a little while exploring the recesses of King's Cross Station, and boarded the Bourne Express at the last second, as it was about to pull out. An open-air picnic lunch in a forest-glade was delightful. One member who was suspected of shooting at the wood-pigeons nearly spoilt the occasion: however, he explained that he was only trying a new effect on his Taylor-Fothergill (a complicated reflex camera he had slung from his neck).

Back in the train we sped over the rails and through a number of exciting tunnels, to our afternoon venue. Here alongside the canal locks one could lie on the grass and listen to the water. Others sat in the weir-keeper's charming cobblestoned yard, where refreshments were kindly wheeled out to them on wheelbarrows by his red-cheeked old mother from her house next door.

It seemed all too soon that we were again in the compartments, with the railway guards thoughtfully closing the windows as we coasted back into King's Cross. On arrival a few went to the loco sheds to watch the high-pressure hoses cleaning the engine. But the younger members attended the ball in the Station Hotel. Even some of their elders came too, for the simpler waltzes and two-steps—though it was clear that they were less able to keep in step with the exacting rhythm of the band.

It was a day we all so thoroughly enjoyed that next year we hope to have a guest of honour—Ludwig Koch, Victor Sylvester, or perhaps Emett.

* * *

Has anyone else noticed the resemblance between a consultant doing a round of his ward in a big hospital, and a chess master playing twenty simultaneous games? Of course the chess master has nothing like a house-physician at his elbow to remind him of the present state of the game; but, if he had, might not their sotto-voce discussions proceed something like this?

H.P.: You will remember, Sir, in this case we tried the old-fashioned Karo Kann, but he seems to be developing a *fianchetto* on the other side: may I suggest B–B4?

Master: No, not yet, Keep him on pawn manœuvres for another few days. Ha! this next case has responded as I thought. It's no longer true that there's no answer to the Cambridge Springs. We can now do P–B5. How's the next one?

H.P.: This is the one that began as a plain Ruy Lopez, but there have been complications. His pawn formation is proving very obstinate; his latest was P–QKt3. Do you think the time has come for more drastic measures?

Master: Yes, it'll have to be surgery. P x P, for a start.

H.P.: You will see that no. 4's central concentration has now loosened. There has been no Queen's side reaction.

Master: Then give him Kt–K4 today, and if all goes well, Kt x B tomorrow . . .

And so on, round the ward (or chess club).

* The report of the Chairman of the Medical Research Council to the Lord President of the Council on *The hazards to man of nuclear and allied radiations*, published June, 1956, as command paper 9780 by H.M. Stationery Office.

1. *Lancet*, 1956, i, 1050, 1062.

Letters to the Editor

DETENTION OF THE MENTALLY HANDICAPPED

SIR,—On June 30 you published a letter from Dr. Fernandez which is full of common sense. It is a healthy thing that there should be people who are vigilant to prevent individuals from being deprived of their liberty and to ensure that laws are framed so as to prevent injustice. But there is a reverse side to the activities of some of these people which is not so commendable.

First, as Dr. Fernandez points out, there is often ignorant criticism of people who have honestly tried to do their best in a difficult situation. Criticism of this kind is commonly made by magistrates, judges, M.P.s, and other prominent people who cannot be directly challenged and who speak without genuine first-hand information about all the circumstances. Their casual remarks are often taken up by the press in such a way as to expose innocent officials to ridicule or disapprobation. Secondly, it is much more easy to make a spectacular exposure of an apparent injustice to an individual, and so to rouse public indignation, than to get this indignation excited for the difficult positive task of providing for the care of children or adults who are mentally handicapped or socially deprived. As a pædiatrician, the problem which continually presents itself to me is not that of people who are trying to escape from irksome restriction, or of parents striving to regain the care of their children, but of the injustice which is inflicted on parents and relatives of gravely handicapped children by the lack of community care, and upon children themselves by enthusiastic misinterpretation of the work of Bowlby and others, that at all costs children should remain in the care of their families.

There are two reasons why individuals should be removed from the care of their families: either the family may be incapable of providing for their nurture, or the burden upon the family (which is really the burden upon the mother) of caring for a handicapped child is too great. Compulsion may be needed in the first case, and can be exercised in law by the assumption of parental rights by a children's committee. Many children are in this way rescued from conditions in which the development of a good personality would be impossible. Popular propaganda (much of it ill informed) may easily induce a reluctance on the part of committees to assume parental rights and even prevent welfare officers from taking into care children who are obviously neglected or maltreated. I doubt if there ever has been any significant abuse by children's committees, or by the guardians who preceded them, of such powers. On the contrary, there is a general tendency to deplore the need to incur public expenditure for this purpose, and to avoid it if possible. The Children's Act was passed because it was known that children who were ill treated or neglected in their families were *not* easily rescued, and becausedthe standards of care of deprived children, both in public and private homes, was poor.

The Mental Deficiency Acts were passed to make it possible to take a child out of the care of a family incapable of caring for him. The need for a legal sanction for this has disappeared. On the contrary, what is now needed for the mother's sake is easy access to permanent or semipermanent community care for children who are so handicapped by physical or mental defect as to make independent life impossible. There is much that is hypocritical in our attitude to this problem. Community care is very expensive; it is easy for those not so afflicted to say that there is a moral obligaton upon the mothers of defective children to keep them at home. There are many thousands of children who have been "ascertained" as defective and who have been for years on the waiting-list for admission to homes or hospitals; probably as many again have never been "ascertained" or at least have not been accepted by the regional hospital boards as requiring residential care.

I do not accept the view that the difficulty of staff recruitment is an adequate explanation of these waiting-lists (and of the years of misery which they mean for mothers). There are many men and women who would willingly make this a profession if the conditions of their work could be made more satisfactory. It is not so much that the financial rewards are poor, although this may be a significant deterrent, as it certainly is in the case of superintendents and house-mothers of children's homes. People who offer themselves for this sort of work do so from a sense of vocation, but they do need a reasonably good standard of life and leisure, and they do not want to be planted in a "colony" of hundreds of children in a semi-hospital setting remote from city life. Nor are these conditions now what is required for defectives. These handicapped people need protection throughout their lives, but only a minority are physically disabled in such a way as to require medical and nursing care. For their protection, some form of legal restriction of liberty is needed for adult defectives, and the same sort of care must be taken over this restriction of liberty as is taken for patients with mental disease. But the principles governing their care should be those applied to any other group of handicapped persons, such as epileptics or spastics—namely, life in *small* communities, with gainful occupations, not hidden away in remote places where they can easily be forgotten, but forming part of general social care in every large town. The work of the staff is not that of nursing, but of maintaining the highest level of constructive activity obtainable.

Bickley, Kent. DUNCAN LEYS.

HYPERCALCÆMIA IN INFANCY

SIR,—Many admirable inquiries into infantile hypercalcæmia have been published, and the condition has been well reviewed by you recently.[1] The theory of an overactivity of vitamin D holds the field: only Forfar et al.[2] have examined it with some scepticism. This and other assumptions, which I find it difficult to accept, are briefly reviewed in this letter, and an alternative ætiological explanation for infantile hypercalcæmia is advanced.

1. That the consequences of hypervitaminosis-D are caused by some toxic action of vitamin D on the tissues, quite distinct from the increased calcium and phosphorus absorption which it produces.

Some support this hypothesis[3]; others, like Albright and Reifenstein,[4] deny it. Pædiatricians are not likely to support this theory if they recall that "stoss" therapy has been safely practised in Northern European countries for many years. This single dose of 15 mg. (600,000 units) vitamin D is stored in brain, muscles, kidneys, and liver without ill effect.[5] If, on the other hand, we accept that the toxic effects of vitamin D are in part due to hypercalcæmia, it is surely illegitimate to draw any ætiological conclusion as to the nature of infantile hypercalcæmia from a comparison of the two syndromes—hypervitaminosis-D and infantile hypercalcæmia.

2. That the degree of calcium retention shown in the published calcium balances in infantile hypercalcæmia is evidence of overactivity of vitamin D.

Calcium retention in the published cases ranged from 25 to 70% of the calcium intake, with a mean of 32%.[2] These figures are high and are indicative of the action of

1. *Lancet*, 1956, i, 1052.
2. Forfar, J. O., Balf, C. L., Maxwell, G. M., Tompsett, S. L. *Ibid*, p. 981.
3. Reed, C. I., Struck, H. C., Steck, I. E. Vitamin D. Chicago, 1939; p. 152.
4. Albright, F., Reifenstein, E. C. The Parathyroid Gland and Metabolic Disease. Baltimore, 1948; p. 95.
5. Houet, R. *Ann. Pædiat.* 1946, **167**, 128, 235.

vitamin D. Absorption of calcium at these and higher levels has, however, been reported after vitamin-D therapy in normal children by Houet [5 6] (70%), by Eliot and Park [7] (60–80%), and by Talbot et al.[8] ("a normal dietary intake of calcium is almost totally assimilated from the gut"). Such figures cannot then be accepted as evidence of "hypersensitivity" to vitamin D. According to Houet,[6] the effect of 15 mg. vitamin D in increasing calcium and phosphorus absorption lasts for a period varying from two to four months. There is, no doubt, an individual variation in the proportions of calcium and phosphorus absorbed, as well as in the duration of vitamin-D action.

3. That children suffering from infantile hypercalcæmia have an innate hypersensitivity to vitamin D.

Two patients of mine who had completely recovered from infantile hypercalcæmia were given large doses of vitamin D without relapse of their disorder. In the three months following his second birthday the first patient was given 555,000 units of vitamin D with an approximate intake of 1·2 g. of calcium daily. Serum-calcium levels during this test period were 11·7, 9·9, 10·6, and 10·7 mg. per 100 ml. The second child, aged one year ten months, having taken one pint of cow's milk daily for two months without hypercalcæmia, was given 2,000,000 units vitamin D in thirty days. The serum-calcium levels during this test period were 11·2, 10·6, 12·2, 10·8, 11·1, 11·1, 11·1, and 11·3 mg. per 100 ml. and the child remained well. These results give no encouragement to the theory of an innate hypersensitivity to vitamin D.

4. Conclusions have been drawn from the amount of calcium in the urine in infantile hypercalcæmia.

This hardly seems justifiable in the absence of glomerular and tubular studies. Considering that there is hypercalcæmia, the amount of calcium excreted in the urine, from published figures and from my own results, constitutes but a tiny proportion of ionised calcium filtered by the glomerulus each day—which may well exceed 2·5 g. The surprise is that the urinary excretion of calcium is so little in excess of the average figures in normal babies of this age-group, which are given by Knapp [9] as varying from 3 to 86 mg. per twenty-four hours.

There is a simple hypothesis which accounts for all the known facts of infantile hypercalcæmia and which has not yet been advanced.

The administration of excessive quantities of vitamin D in dried milks and cereals ensures the maximal absorption of calcium and phosphorus. The total amounts of calcium and phosphorus retained may be as great as 1 g. of calcium and 1·5 g. of phosphorus daily; and the infant kidney has the task of handling this load. Knapp [9] assumes that the infant tubule is not yet under full parathyroid control, which is achieved at two years of age—and hence the small quantities of calcium excreted in the urine compared with older children and adults. The children suffering from infantile hypercalcæmia are, on this theory, those who under vitamin-D therapy have absorbed large amounts of calcium and phosphorus and whose renal tubules are too immature to respond to the necessary variations in parathyroid activity, so that there is an excessive tubular reabsorption of calcium. In one boy with infantile hypercalcæmia the injection of parathyroid extract ('Para-thor-mone' 10 *U.S.P.* units six-hourly for twenty-four hours) doubled the output of phosphate in the urine. The only conclusion which can be safely drawn from this experiment is that the renal tubule was not completely insensitive to the action of parathyroid extract.

This hypothesis could only be proved by giving children an intravenous load of phosphate as did Klein and Gow,[10] or by giving them an intravenous load of calcium as Nordin and Russell Fraser [11] have done in adults. Since this will not be regarded as a justifiable investigation in sick babies, we shall never know the answer. Meanwhile, as so many have advised, we should act in advance of proof. The Ministry should ask the manufacturers to halve the vitamin-D content of their dried milks and to remove vitamin D entirely from their cereals. The British Pædiatric Association was invited to give its advice to the Ministry eighteen months ago, but no action has yet been taken on its report. Captain, art thou sleeping there below?

Derby. DOUGLAS HUBBLE.

WANTED: A NEW CAR

SIR,—A few weeks ago an advertisement in the personal columns of the *Times* read: "Young Harley Street specialist, hit by 'credit squeeze' urgently requires 1939 Rolls Bentley"—or words to that effect. The Central Consultants and Specialists Committee has recently decided [12] that there is not a sufficiently strong case to be made at present for an increase in the mileage allowance. This is a severe disappointment to those whole-time consultants who cover a big mileage in the course of a working week. Not for us the luxury of what our grandfathers called "cultivating a professional appearance" nor for us the argument that the exacting nature of our work requires us to travel in comfort in order to arrive with nerves unjaded, hands steady, and heads clear. The whole-time consultant usually drives the smallest and cheapest car that will stand up to his work. As he drives he worries about how much longer his car will last, and how he will be able to afford a replacement.

I bought my Hillman Minx in July, 1950; in it I have just exceeded 80,000 miles. I would not call it a comfortable car to drive, but it has proved to be very reliable and has the economic advantage of being just over 10 H.P. so it comes just within the higher N.H.S. mileage allowance. Including purchase price, tax, insurance, A.A. subscription, and all regular garage bills (but excluding out-of-pocket road-side expenses and occasional car-hire bills of which I have no record), I find the car has cost me £1892 or 5·67*d.* per mile. In the same period I have received £1405 3*s.* 4*d.* in payment of motoring expenses, based on claims for the 48,562 miles which have been recognised as necessarily covered in the course of my work—an average of 6·95*d.* per working mile.

It may be said that for every mile I drive in the course of my work I save 1·28*d.* towards the cost of a replacement. The position is really less favourable than that: the general costs of motoring are steadily increasing, my annual mileage mounts a little each year; if it has not done so already my present car must soon have exceeded its optimum economic life. The anachronism that the greater one's professional mileage the smaller the allowance is ever present in the minds of doctors in my position. If my professional annual mileage were one-tenth what it is I should be paid 9¼*d.* per mile (a "saving" of 3·58*d.* per mile on the same total mileage); as it is, the more I use my car for work the faster it wears out and the less I am paid towards its upkeep and replacement.

The heaviest part of the burden the whole-time consultant bears is not revealed by these bald figures. It lies hidden in my 30,000 odd miles for which no travelling claim can be made, motoring which is presumed to be private and for pleasure—as opposed to professional. In this total are countless short journeys from home to hospital, and less frequent but often longer journeys from home to medical meetings, &c., which were made by car in case of an emergency call, and which cannot be claimed (at the 2*d.*-less-than-full-rate scale which applies in this circumstance) because no call came. Even when such a call does come the whole-time consultant pays a small penalty (a fine perhaps) for indulging in this semi-professional use of his car. I calculate the penalty at approximately ¾*d.* per mile; for my little saving of 1·28*d.*

6. Houet, R. *Ibid*, 1946, **166**, 167.
7. Eliot, M. M., Park, E. A. Brennemann's Practice of Pædiatrics. 1948; vol. i, p. 39.
8. Talbot, N., et al. Functional Endocrinology. Cambridge, Mass., 1952; p. 79.
9. Knapp, E. L. *J. clin. Invest.* 1947, **26**, 182.
10. Klein, R., Gow, R. C. *J. clin. Endocrin.* 1953, **13**, 271.
11. Nordin, B. E. C., Fraser, R. *Clin. Sci.* 1954, **13**, 477; *Lancet*, 1956, i, 823.
12. See *Brit. med. J.* 1956, i, suppl. p. 218.

per mile becomes a minus quantity through this 2*d*.-less-than-the-full-rate arrangement.

Since I do not motor for pleasure and do not go away from home for holidays, my purely private motoring is very limited; I estimate it at about 1500 miles a year. I believe that my "professional" motoring, in the life of my present car, has exceeded the recognised figure by about 20,000 miles. Any adverse difference between cost-of-motoring and allowance-for-motoring is not a professional expense admitting any tax relief in the case of the whole-time consultant, nor is he eligible for any depreciation allowance to offset the cost of a new car. So far as the tax authorities are officially aware, all the whole-time consultant's professional expenses are fully covered by appropriate allowances.

There is a derivative of the Judgment of Solomon used by parents when two children quarrel over the division of an apple: the child who insists that the halves are equal is told to give away the half he wants to keep for himself. If the Ministry of Health would buy and maintain a car for my professional use I should be well content to hire it from them at their current mileage allowance rates for my private motoring.

Ipswich. R. M. MAYON-WHITE.

GLYCYRRHETINIC ACID IN DERMATOLOGY

SIR,—Glycyrrhetinic acid as an anti-inflammatory agent in dermatology has been regarded by some as useless, while others have found it to be as valuable as hydrocortisone.

Glycyrrhetinic acid is not a simple substance, but a mixture of acids derived from liquorice. It is rapidly becoming more evident that the components and isomers of this mixture are profoundly affected by the method of extraction and purification. Some constituents are evidently more active dermatologically than others. It behoves us, therefore, to be very cautious before condemning this substance, which may prove as valuable as hydrocortisone at a fraction of the cost.

I have tried in my hospitals a number of glycyrrhetinic-acid preparations. Some results were disappointing; but on the other hand one preparation (made by Biorex Ltd.) has proved most effective. Whether this is due to suitable formulation or to the choice of components and isomers remains to be seen.

The matter cannot be regarded as closed, and the situation should be reviewed in the light of recent favourable trials, and of new formulations of this valuable anti-inflammatory agent.

Hove. E. COLIN-JONES.

SIMPLIFIED DOSAGE

SIR,—May I support Mr. Blockey's appeal of July 7? Some time ago I tried to launch a similar scheme, though with little success.

In its simple form, as described by Mr. Blockey, the proposal presents some difficulties. For example, dosages for children are not those for an adult. Also, with such a drug as aspirin, doses varying from gr. 5 to gr. 60 are prescribed for different reasons. The prescription of "one dose" would not allow for this.

In my paper the Human Unit was conceived to be the dose which would be prescribed to a newborn baby. Alternatively, 1 H.U. could be defined as the dose which would have the smallest recognisable effect on a fully grown adult. 5 H.U. was defined as the normal dose for a fully grown adult male, and 10 H.U. the dose which would just begin to have toxic effects on an adult. (Using the second set of definitions, of course, dosages for children are again ignored.) Whichever set of definitions is used, clinical judgment is still needed in each and every case; but the clinician's task is simplified because only the numbers from 1 to 10 need be remembered to cover the dosage of all drugs.

It will be evident that, using either set of definitions, 5 H.U. (in milligrammes or grains, let us say) is not necessarily five times 1 H.U.; and 10 H.U. not necessarily twice 5 H.U., or even ten times 1 H.U. Suppose, for example, that for a drug Y the dose for an infant is gr. 1, and for an adult gr. 12, and the minimal toxic dose for an adult gr. 30. These figures would represent 1, 5, and 10 H.U. respectively; but gr. 12 (5 H.U.) is not five times gr. 1 (1 H.U.), and gr. 30 is not ten times gr. 1 or twice gr. 12. Initially, for every drug the pharmacopœias would have to give (for manufacturing and dispensing purposes only) the amounts in grains, milligrammes, &c., equivalent to the three defined doses, 1, 5, and 10 H.U.

Obviously, the scheme would meet opposition from pharmacists, manufacturing chemists, and especially, pharmacologists, who would have to convert rat units into human units. But prescription with absolute safety for the *human* patients' benefit is far more important than the inconvenience which might arise during a period of transition.

London Hospital Medical College, E.1. ANTHONY R. HYETT.

FLUORINE, DIET, AND DENTAL CARIES

SIR,—Your leading article of July 7 draws much-needed attention to the subject. It is, however, not true to say that "The results of the [fluoridation] trials in Grand Rapids and in Brantford have not yet been published." Accounts of the effect of fluoridation on dental decay in both these communities were published in the report of Forrest et al.[1] The results of 6½ years of fluoridation in Grand Rapids were reported by Arnold et al.[2] and the 10-year report of the Brantford study has been published this year.[3]

Similar studies have also been carried out at Sheboygan, Wisconsin, Marshall, Texas, and Evanston, Illinois. There have, therefore, been six large, long-term, independent trials of fluoridation. In each of these communities the findings were essentially the same as those (indicated in your article) at Newburgh—the children who had consumed fluoridated water throughout their lives had approximately 60% less caries than children of comparable age in the control towns or observed before fluoridation was begun.

Dental Department, Guy's Hospital, London, S.E.1. A. C. KERR.

SIR,—You suggest that the time has come to consider the acceleration of plans for fluoridation in this country. I believe that this is long overdue. The Government have never given any intelligible reason for their extremely dilatory policy. 25 million Americans now drink fluoridated water; many of them have used it for ten years; fluoridation on a small scale has been in progress for years in Canada, Australia, and New Zealand, and its extension to the bigger towns in those countries is now under active consideration; here, on the other hand, it is only just beginning, and on a quite minute scale.

The Ministry of Health have stated[4] that before fluoridation is applied to all fluoride-deficient water-supplies, there should be demonstrations of its value in this country. It has, however, already been demonstrated, through the occurrence in some areas of naturally fluoridated water, that fluoridation has the same effects here as it has in America. To convince *all* local authorities of this it may possibly be necessary to demonstrate the fact repeatedly; there are, however, many that are already convinced but have been refused permission to begin fluoridation. What good reason can there possibly be for this? Fluoridation in those towns that

1. Forrest, J. R., Longwell, J., Stones, H. H., Thomson, A. M. The Fluoridation of Domestic Water Supplies in North America as a Means of Controlling Dental Caries. H. M. Stationery Office, 1953.
2. Arnold, F. A. jun., Dean, H. I., Knutson, J. W. *Publ. Hlth Rep., Wash.* 1953, **68**, 141.
3. Brown, H. K., McLaren, H. R., Josie, G. H., Stewart, B. J. *J. Canad. dent. Ass.* 1956, **22**, 207.
4. Ministry of Health Reference Note no. 9. July, 1955, The Fluoridation of Water and the Prevention of Dental Decay.

want to have it would not affect the demonstrations and studies now taking place in some towns. It would, on the contrary, itself demonstrate that the procedure has now passed beyond the experimental stage.

The opponents of fluoridation, whatever they may lack of other qualities, do show a degree of enthusiasm for their cause that seems to be sadly lacking in official quarters.

London, S.W.10. R. B. D. STOCKER.

REPRESENTATIVE MEETING

SIR,—In your account last week of the annual representative meeting of the B.M.A., under Domiciliary Visits (p. 89) you report the amendment by East Herts asking for "payment of domiciliary consultation fees to whole-time consultants without restriction." The amendment was on the agenda in this form, but at the preliminary meeting of representatives of divisions to discuss grouped amendments it was agreed that the last part of the amendment should read "fees to whole-time specialists up to the permitted maximum," and the amendment was moved and carried in this form.

Liverpool. WILLIAM D. GRAY.

A NEW CLINICAL ENTITY?

SIR,—Your recent leading article[1] mentions the Cumberland outbreak which I described last year.[2]

After I wrote, four specimens of cerebrospinal fluid were taken from typical cases, and proved normal in all respects. It had been realised early in the outbreak that C.S.F. examinations were desirable, but these are difficult to arrange in general practice. A large number of fæces, throat washings, and conjunctival swabs from cases have been examined for viruses by Dr. B. E. Andrews of the Virus Reference Laboratory, Public Health Laboratory Service, using the HeLa cell tissue-cultures, but no virus has been isolated. It is hoped that further virus studies will be undertaken.

It is also hoped that electromyographic studies on any cases showing muscle weakness will soon be possible, enabling a comparison to be made with E.M.G.s already obtained in outbreaks of a probably similar nature.

As fresh clinical cases keep occurring, presumably the infection remains active in this area. It is noticeable that new arrivals in the district have sometimes been affected within a fortnight.

Additional symptoms noted in a few new cases within the last six months have been nocturnal auditory and visual hallucinations, lasting three or four nights. Two patients who had been previously infected later developed nominal aphasia.

One has improved considerably over two months, but still has some trouble with the memory. In the other case no localised cause for aphasia was found by a neurologist. In this case a decerebrate type of rigidity with stupor developed about nine months after the onset of aphasia, with general mental impairment. The C.S.F. was normal. After three weeks the patient died. No gross abnormalities were found post mortem, but a full histological examination of the brain is being undertaken.

Two further cases developed muscular weakness of the lower limbs, markedly diminished tendon reflexes, and extensor plantar responses. In six weeks the reflexes and power returned to normal. Acute myalgia, tachycardia up to 150 per minute, persisting for weeks or months, and dyspnœa on exertion have also been noted in recent cases. Emotional outbreaks, depression, and loss of concentration are frequent findings.

It has been noticed that in patients' households there has often been a loss of condition in pet budgerigars about the same time; and a number of birds have died. As budgerigars are common pets in this area, this may be fortuitous; but in future any affected birds will, it is hoped, be investigated, in case they are susceptible to the infecting agent.

Dalston, near Carlisle. A. L. WALLIS.

1. *Lancet*, 1956, i, 789.
2. *Ibid*, 1955, ii, 290, 1091.

METHYLTESTOSTERONE

SIR,—In their letter of June 30 Dr. Foss and Dr. Simpson asked for information about cases in which jaundice was attributed to methyltestosterone.

A male eunuch, aged 38, was treated for a year with monthly injections of testosterone propionate. Then in February, 1955, therapy was changed to methyltestosterone 25 mg. daily sublingually. In January, 1956, he developed diarrhœa lasting for two days, and subsequently became jaundiced, with pruritus, pale stools, and dark urine, but no abdominal pain, anorexia, or constitutional disturbance.

On admission to hospital in February, 1956, he felt well and was afebrile, but was deeply jaundiced; the spleen and liver were not palpable but there were some petechial hæmorrhages over the trunk. Biochemical investigations showed a serum-bilirubin of 24 mg. per 100 ml., alkaline phosphatase 23 units, thymol turbidity 1 unit, colloidal gold negative, cephalin cholesterol 1 unit. Serum-proteins: albumin 3·1 g., and globulin 2·9 g. per 100 ml. Electrophoretic pattern normal. Prothrombin-time 40%, rising to normal after intramuscular menadione ('Synkavit'). Urine contained bile but no urobilinogen.

Methyltestosterone was discontinued and over the following two and a half months his jaundice slowly disappeared. Liver-function tests repeated on four further occasions showed consistently negative flocculation tests, with alkaline phosphatase values of 29, 28, 18, and 16 units. No ætiological factor other than methyltestosterone could be incriminated in this case, which corresponds closely to those described by Werner et al.[1]

I wish to thank Prof. A. Kekwick for permission to record this case.

Department of Medicine,
The Middlesex Hospital,
London, W.1. E. KEITH WESTLAKE.

CARCINOMA OF STOMACH AND ABO BLOOD-GROUPS

SIR,—In their series of patients with carcinoma of the stomach Dr. Jennings and his colleagues (July 7) found that the excess of blood-group A over blood-group O applied particularly to those in whom the lesion was at the pyloric end of the stomach. We have comparable data which do not support this finding and which, in fact, would appear to contradict it. A full analysis of our series of 600 cases will be reported later, but the accompanying table shows the subdivision according to the site of origin of the lesion in the 443 cases in which this was possible. We have used for classification the same four areas of the stomach as Dr. Jennings and his colleagues, rejecting all those cases in which the site of origin was uncertain. In all these cases the diagnosis was based on operative or post-mortem findings.

BLOOD-GROUPS IN 443 CASES OF CARCINOMA OF STOMACH SUBDIVIDED ACCORDING TO THE SITE OF ORIGIN OF THE TUMOUR

Site	Sex	Blood-groups			
		O	A	B	AB
Pylorus and antrum	Males	75	56	12	1
	Females	43	31	5	0
Body and cardia	Males	60	78	17	5
	Females	25	31	2	2

It can be seen that in our series there is a higher incidence of group A when the growth arose in the body or cardiac end of the stomach than when it arose in the pylorus and antrum, and that this applies in both sexes.

1. Werner, S. C., Hanger, F. M., Kritzler, R. A. *Amer. J. Med.* 1950, **8**, 325.

When an association between a blood-group and a disease has been established, as has that between group A and carcinoma of the stomach, there is need for studies of subdivisions such as that made by Dr. Jennings and his colleagues. It is a pity that in this instance there are opposite findings in the two series, but such discrepancies can be expected to occur considering the small numbers available for analysis after subdivision have been made. The numbers are likely to be large enough for conclusions to be drawn only when data collected in several centres have been pooled and tests have been made for heterogeneity between the different series.

Heredity Clinic,
David Lewis Northern Hospital,
Liverpool.

D. R. HADDOCK
R. B. MCCONNELL.

BURNS AND SCALDS

SIR,—Dr. Robertson (July 7) asks me "What is the advantage of using penicillin cream and risking penicillin dermatitis (or at least the wrath of the dermatologists) when the drug can well be given systemically?" My answer is:

(1) We have good statistical evidence, already quoted (June 2, p. 858) that the application of penicillin cream greatly reduces the chances of streptococcal infection of burns when these are exposed to the risk of such infection in a hospital ward. Since that risk frequently exists also in patients' homes (a child's running ear, or septic abrasions, streptococcal throats, &c.) it would seem wise to give similar protection to the burns treated at home. I know of no evidence that penicillin administered systemically has a similar and equally potent prophylactic effect. Can Dr. Robertson tell me of such evidence?

(2) As already stated twice in this correspondence (June 2 and July 14) I am not scared by the bogy of penicillin dermatitis, because, in an experience of about 13,500 cases (10,000 outpatients and 3500 inpatients), that condition has been rarely seen. For the same reason I am not terrified of the wrath of "the dermatologists," who, presumably, see only the occasional instance of dermatitis so caused, and might conceivably be mistaken in their assessment of the degree of risk. Have they given due weight, I wonder, to our Birmingham experience, which is, I suppose, much larger than that of any other hospital?

(3) It does not make sense to me to subject a patient to the discomfort of injections two or three times a day, or even once a day, for a week, to guard against an infection which is unlikely to occur in the majority of cases (treated at home), if the same protection can be obtained—so far as we know at least as certainly—by the application of a soothing cream on the 1st day, repeated, perhaps on the 7th to 10th day. Apart from the discomfort of the injections, is not the wasted time and effort, on the part of the doctor or nurse, also worthy of consideration?

Farnham Royal,
Bucks.

LEONARD COLEBROOK.

BONE AND JOINT TUBERCULOSIS

SIR,—Those concerned in the management of skeletal tuberculosis can only welcome the active approach by Mr. Mills and his colleagues in their article last week.

Our experience has included patients who have been grateful for active, if surgical, diagnosis. This is so when the stake is for firm decisions as against hearsay recollection of disabilities inflicted by lengthy trials of immobilisation in diagnostic indecision.

Experience with regional-lymph-node biopsy in particular is increasing its value even when negative. The individual case must determine its management when bacteriological proof is absent. Some lesions must merit treatment on clinical grounds, but there are many such when a therapeutic trial of mobilisation is indicated. "Now that such therapeutic advances are available, there is afforded by them a reserve safeguard which often justifies provocative clinical trial where the diagnosis is in doubt."[1] Thirty-six inguinal adenectomies were analysed in this unit.[1] This was a total unselected series over ten years during which some eighty cases of tuberculosis of the knee were seen. A further three adenectomies have since been done within the orthopædic service of the Eastern Region (Scotland). These thirty-nine have shown the same high degree of diagnostic accuracy as those reported by Mr. Mills.

Royal Infirmary,
Dundee.

I. M. STEWART.

1. Stewart, I. M. *Tubercle*, 1955, **36**, 185.

PARTHENOGENESIS IN HUMAN BEINGS

SIR,—It is a pity that Dr. Gorer, in his letter last week, has confused the issue by unjustly impugning my statistics. If we accept that the probability of serological agreement between mother and daughter in a single pair chosen at random is 0·01 it follows that the chance of non-agreement is 0·99. The chance of non-agreement in all of a random sample of eight pairs is $0{\cdot}99^8$, and therefore that of agreement in one or more pairs of such a sample is $1-0{\cdot}99^8$, or about 0·0772. This, surely, is "of the order of 0·08" as I previously stated. I see nothing in Dr. Gorer's letter to make me change my opinion, and I notice that Professor Haldane's disclaimer issued through Associated Press (but unfortunately not published in your columns) reaches a conclusion similar to mine.

Pathology Laboratory,
Essex County Hospital,
Colchester.

J. W. NICHOLAS.

*** We have not received any disclaimer from Professor Haldane.—Ed. L.

SIR,—I hope I may be able to remove certain misunderstandings which the correspondence on this subject has revealed.

The significance of pre-knowledge is a matter of opinion rather than fact. But Dr. Nicholas (July 7) disagrees strongly with my viewpoint, and goes so far as to stigmatise as "simply not true" my statement that "a very much higher degree of probability must be attached to a claim made by a mother who could not possibly have any pre-knowledge of the results of these special investigations." A case from the Danish courts is, I think, a fair parallel. A woman claimed to be pregnant by a man with ectrodactyly. Her evidence was not very good. When the baby was born it was ectrodactylous. The court accepted this as proof. No doubt there were other ectrodactylous men in Denmark, and a mutation might have occurred. But if the accusation was made *before* the mother had seen the baby's hands, any other explanation is unlikely. If she had made it *after* the birth, she might well have accused the only ectrodactylous man she knew.

In arriving at an assessment of probabilities, Dr. Nicholas has apparently failed to take into account that the blood-groups of the Betas are quite compatible with parthenogenesis by autofertilisation. The mother might be of genotype A_1O and the child OO. The A_1 gene, in the mother, is known to have a suppressive effect on the expression of Le^b, the appropriate gene or genes for which might thus be present in both people, but only expressed in the daughter. The P groups are rather against parthenogenesis, but I do not know enough about the inheritance of the grades of P positiveness to be sure.

In considering the significance of the skin-graft test, two important points must be taken into account. Firstly, no internal controls—that is, autografts—were performed. The absence of controls makes it impossible for me to draw the same conclusions as Dr. Nicholas, Dr. Spurway (July 7), and Dr. Gorer. Secondly, a possibility that has not been mentioned is that one of the incompatibility antigens might behave as a recessive and appear in a homozygous daughter but not in a heterozygous mother.

I think it only fair to emphasise the conclusion that was drawn from this investigation, as I originally stated it—namely, I have been unable to disprove the mother's claim that her child was fatherless.

London, W.8. S. BALFOUR-LYNN.

PIPERAZINE TREATMENT OF ASCARIS INFESTATION

SIR,—In the treatment of ascaris infestations with piperazine salts, various dosage schedules have been tried.

White [1] obtained radical cure in 3 cases with the hydrate, giving 68–130 mg. per kg. body-weight for three days; and Dunn [2] was able to report a cure-rate of 95% in 47 children treated with the adipate, who received 75 mg. per kg. daily for three days. Trials with single doses were described by Goodwin and Standen [3] who gave 3 g. of the citrate to persons weighing over 20 kg. The worms were expelled in a good proportion of cases, but radical cure was by no means always achieved. We ourselves [4] used single doses of 3–5 g. of the citrate and 4·5 g. of the adipate, but did not regularly obtain radical cure.

A single dose, which can be taken in the doctor's presence, has obvious advantages, especially in mass treatment. We therefore decided to ascertain whether radical cure could be ensured by giving the drug in larger quantities. 35 adults of weights ranging from 40 to 80 kg. were treated each with a single dose of 6 g. of piperazine adipate in tablet form. No preparation of the patient was done before administration of the drug and no purgatives were given after it. Stools were examined by the saline flotation method immediately before the treatment, three days after it, and thereafter every other day up to two weeks. Cases were considered cured when results were negative at the last four consecutive examinations. The results were:

No of cases	Expulsion of worms	Cure
35	35 (*100%*)	33 (*94%*)

The dose of 6 g. was well tolerated with no side-effects, immediate or delayed. In all cases worms were expelled within forty-eight hours (65 worms in one case). 33 patients were completely cleared of the infestation. In the other 2, follow-up showed eggs in the stools; but these were very few and were cleared by repeating the treatment ten days later.

We should like to express our thanks to the British Drug Houses Ltd. (Cairo) who supplied the piperazine adipate ('Entacyl') we used.

Department of Parasitology, Abbassia Faculty of Medicine, Ein Shams University, Cairo. M. A. RIFAAT H. F. NAGATY.

THE PATTERN OF GENERAL PRACTICE

SIR,—Dr. Court's kind words (May 19) on my article (May 5) brought to my attention a deficiency in it—namely, that I did not emphasise in the conclusion my main thesis, which, if not new, I have not seen explicit elsewhere. I was probably unconsciously deflected by its likely unpopularity in all but the largest cities of North America.

The thesis is that in a dense population, where medical care is made equally available to all, the most efficient use of medical man-power involves a division of labour between hospital and non-hospital practitioners. Thus the small amount of hospital work done by British general practitioners is part of a correct or favourable evolutionary adjustment of medical practice to the medical environment. This is applicable to all urban practice. Attempts therefore to reverse this trend are not likely to produce happy results.

Our failure hitherto to educate for this circumstance is an example of "cultural lag" of which Dr. Franz Alexander provides many other examples in his book *Our Age of Unreason*. We preserve a romantic ideal of the totipotential doctor based on what I would call "pre-urban" conditions. For medical purposes, anywhere within 30 miles of a city should be regarded as urban.

The Sanatorium, Saskatoon, Saskatchewan, Canada. A. G. RICHARDS.

AN OUTBREAK OF POLIOMYELITIS

SIR,—In his letter of July 14, Mr. Le Vay criticises our attitude towards the management of acute poliomyelitis as described in your issue of July 7. But surely we need make no apology for concentrating first on saving life: it must be obvious that the needs of respiratory insufficiency must take priority over all else.

As regards the care of muscles, Mr. Le Vay thinks that the methods used "insult the natural processes of recovery." His quotations from the paper give a most misleading impression of these methods, but he is correct in supposing that we have come to disapprove of some of the methods now widely employed in this country.[1] In particular we think that the long periods of inactivity often enforced are harmful to paralysed muscles, and we have dispensed with the splints and plaster beds which are advocated in current textbooks.

Unfortunately it is difficult to compare the value of different methods of treatment, partly for the reason that therapists have difficulty in approaching this subject dispassionately. A study of the physiology of muscle cell and neurone probably helps most provided that the effect of what is done is critically observed.

Oxford. W. RITCHIE RUSSELL.

SIR,—In their article (July 7) Dr. Espir and his colleagues make no mention, unintentionally I am sure, of the position of the "fever" physician. I would say, however, that general physicians have been known to disclaim any special knowledge of children, while pædiatricians may well look askance at the high proportion of dangerous cases of poliomyelitis now occurring in adults. Many of my colleagues are today in charge of infectious-disease units forming part of general hospitals, and have had long experience of the problems of tracheotomy and of bulbar and respiratory paralysis. They have also acquired some facility in the use of the endotracheal tube and the bronchoscope.

Our experience of bulbar cases in the regional centre at Romford last year was somewhat different from that of your contributors. Between July and November we admitted fifteen such patients, many of them very restless and confused. In addition to posture, suction, and tube-feeding we used intramuscular paraldehyde freely, and pethidine more circumspectly, as sedatives. Tracheotomy was not required in any of these patients, and in my experience it is very unusual for respiratory paralysis to develop after bulbar involvement.

Like your contributors, we had serious difficulty in finding sufficient nursing staff. At the height of the "season" in November, we had thirty-two patients in the unit, of whom nine were receiving intermittent positive-pressure respiration and seven assistance from tank or cuirass respirators. Approximately 20% of the nursing staff of the hospital were engaged in the unit, together with a few volunteers kindly lent from other hospitals in the region. Even so, the number, particularly of trained staff, was quite inadequate. Measures have been taken at both local and regional level, by means of lectures, short practical courses, and so on, to try to ensure that adequate staff will be available for an out-

1. White, R. H. R. *Lancet*, 1954, ii, 315.
2. Dunn, T. L. *Ibid*, 1955, i, 592.
3. Goodwin, L. G., Standen, O. D. *Brit. med. J.* 1954, ii, 1332.
4. Nagaty, H. F., Rifaat, M. A., Salem, S. *Bull. clin. sci. Soc. Abbassiah Fac. Med.* 1955, **6**, no. 2, p. 3.

1. Russell, W. R. Poliomyelitis. 2nd ed., London, 1956.

break of similar or greater proportions this year. But an epidemic comparable to that in Denmark would find us woefully unprepared.

Rush Green Hospital, Romford, Essex. E. JAMES.

INHIBITION OF FIBRINOLYSIS BY ALIMENTARY LIPÆMIA

SIR,—The demonstration by Dr. Greig (July 7) of the inhibitory effect of a fatty meal on normal fibrinolytic activity may do much to reconcile what have become two opposed hypotheses to explain atheroma. I believe, however, that it is essential at this stage to define the potential of the kind of fibrinolytic activity in normal blood that we measure in vitro, and what may be expected of it.

The activity is of a very low order. Admittedly the activity in vivo may be greater than is found in the test-tube, but there is no evidence that it is. Recent studies on fibrinolysis, including Dr. Greig's, have depended on using plasma diluted ten or twenty times. When whole plasma is used, complete lysis takes $1^1/_2$–7 days or more; the relation between dilution and lysis-time is linear, the slope of the curve being probably dependent on the inhibitor content of the plasma.[1] The speed of lysis when plasma has been diluted gives no indication of the very much longer lysis-times required for undiluted blood and plasma. Furthermore, except in some cases of hepatic cirrhosis,[2] I have never observed lysis of a whole-blood clot as opposed to a whole-plasma clot. I would, therefore, join issue with Dr. Greig when he implies that there is a close temporal relationship between complete inhibition of fibrinolysis and a thrombotic episode, and that inhibition of fibrinolysis by an evening meal is concerned with a coronary thrombosis occurring on the same night. The activity so far demonstrated is not great enough to justify this assumption.

It should not be inferred, however, that because the fibrinolytic activity present in normal blood is small, it is therefore negligible and only of academic interest. It does, I believe, merit study as a possible physiological mechanism for removing fibrin deposited on vessel walls, and hence, in line with the Duguid hypothesis, as a protector against atheroma, and secondly as a remover of the nidus of a future thrombus. In the circulation there is in contact with the vessel walls a scarcely moving layer of plasma. It has been the working hypothesis of my colleagues and myself for some years that there is a tendency to the deposition of fibrin on all but the smoothest of vessels, and that natural fibrinolysis is concerned with its continuous removal. Fibrin-clot will adsorb the labile fibrinolytic component from both blood and plasma.[3] This could allow of the potentiation of a relatively weak mechanism. Fibrin deposited on a vessel wall might be expected to pick up and concentrate fibrinolytic component from the plasma passing over it, thus ensuring more rapid lysis than would be afforded by its intrinsic content of fibrinolysin. Once a blood-clot had completely occluded a vessel, lysis would depend on the fibrinolytic content of the whole clot and could no longer be assisted by adsorption.

All this is, of course, speculative; but it is speculation which takes account of the low order of natural fibrinolytic activity. It is put forward firstly to indicate that natural fibrinolysis, as measured by our present imperfect methods, is perhaps capable of a function in vivo, and secondly to afford a modification of the hypothesis put forward by Dr. Greig, which necessarily implies a degree of activity which to my knowledge has never been demonstrated.

1. Fearnley, G. R., Lackner, R. *Brit. J. Hæmatol.* 1955, **1**, 189.
2. Fearnley, G. R. *Lancet*, 1956, i, 450.
3. Fearnley, G. R. *Nature, Lond.* 1953, **172**, 544.

In conclusion, may I congratulate Dr. Greig on an admirable piece of work.

Gloucester Royal Infirmary. GEORGE R. FEARNLEY.

THE COLLEGE OF GENERAL PRACTITIONERS

SIR,—The College of General Practitioners is developing so rapidly that it now needs a building of its own. Generous financial support, not only for construction but also in part for maintenance, is making this possible.

Agreement in principle has been reached with the President and Council of the Royal College of Surgeons for the long-term lease of a site on the south side of Lincoln's Inn Fields. Sir Edward Maufe, R.A., has kindly agreed to act as consulting architect, and Messrs. Trehearne & Norman, Preston & Partners have been appointed architects. An approach is being made to the London County Council, prior to application for planning permission, and it is hoped to erect a fine building on this site by 1962.

14, Black Friars Lane, London, E.C.4. W. N. PICKLES President.

Medicine and the Law

Limited Liability

ON Dec. 4, 1952, a child of two who could not walk normally was examined by a doctor in the outpatient department of a hospital. The doctor diagnosed muscular weakness and advised that the child should be brought back in six months and that no medical treatment was necessary in the meantime. The doctor left the hospital on March 31, 1953. When the child was examined again six months later, on June 4, 1953, she was found to be suffering from bilateral congenital dislocation of the hip-joints and was admitted to the hospital for treatment. On Aug. 6, 1954, the child's mother, on behalf of the child, issued a writ claiming damages: she alleged that the doctor, the servant or agent of the hospital, had negligently failed to diagnose the child's condition, failed to provide any proper treatment, and failed to provide for more frequent medical examination than at six-monthly intervals, with the result that the child's condition had been prolonged and aggravated and more and severer medical treatment had become necessary.

The hospital and the doctor denied negligence and the doctor, by his defence, pleaded that, as he had been acting in execution, or intended execution, of a public duty and the proceedings had not been brought before the expiration of a year from the date when the cause of action accrued they were barred by section 21 of the Limitation Act, 1939. The hospital did not plead the Limitation Act. It was agreed that the doctor was a servant or agent of the hospital and it was directed that the issue raised by the doctor should be tried as a preliminary issue of law. Counsel for the plaintiff contended that the doctor was responsible for the child throughout the six-month period during which she had had no treatment and that, therefore, there had been a continuing neglect or default which did not end until June 4, 1953, so that the cause of action did not accrue until that date; the period of limitation ran from that date and was extended by the Law Reform (Limitation of Actions) Act, 1954,[1] and accordingly the claim was not statute-barred.

Mr. Justice PEARSON said that even if the cause of action accrued more than a year before the action was begun, it would not be statute-barred under the Limitation Act if the act, neglect, or default was a continuing one. The question had to be decided in relation to the particular facts of the case. Prima facie time would begin to run, under the Limitation Act, on Dec. 4, 1952,

1. See *Lancet*, 1954, ii, 548.

and the one-year period would end on Dec. 4, 1953. Was it right to say on the facts of the case that there was a continuing act, neglect, or default right up to June 4, 1953, so that the period of limitation was extended? One must take into account all the facts of the case and take a common-sense view. The doctor was one of the hospital-officers. He was operating in the outpatient department. He saw outpatients and advised what was to be done. When the child was brought to him he made his diagnosis and gave his advice. The child was taken away and as far as he was concerned she was never seen again. As a matter of common sense his Lordship thought that there was no continuing neglect or default. What the doctor undertook to do on Dec. 4, 1952, was to make his diagnosis and give advice on that particular day, and thereafter he had no connection with the child at all. Anything he did wrong or anything he neglected to do he did on that day. There might be cases where a doctor had some continuing responsibility for a patient and there might be a difference between a hospital doctor and a general practitioner, but in the present case with which he, his Lordship, was expressly dealing, there was no continuing cause of action after Dec. 4, 1952, and therefore the claim against the doctor was statute-barred. There would be judgment for the doctor against the plaintiff.

Hari-Sheft *v.* **Board of Governors of the Royal National Orthopædic Hospital and Another.**—*Queen's Bench Division:* July 5, 6, 1956. Counsel and solicitors: David Lessman (D. A. Rose & Co.); J. R. Cumming-Bruce (Hempsons).

E. M. WELLWOOD
Barrister-at-law.

Parliament

Radiation Hazards

THE debate in the House of Commons on July 16 on the Medical Research Council's report was uneasily contained by the Speaker's ruling that though the effects of the nuclear bomb tests could be discussed the control of the tests could only be the subject of a defence debate. The report itself had impressed different members in different ways. Dr. EDITH SUMMERSKILL, who opened the debate, thought that it "constituted a most serious warning." Mr. R. H. TURTON, the Minister of Health, in ending the debate, described the findings of the report as "reassuring." Mr. RICHARD FORT thought that the report made it clear that we and our children had more to fear from natural and industrial radiations than from "tests of nuclear weapons so far." Research, particularly into the genetic effects of radiation would have to continue for the rest of the century and a good deal longer. But Mr. LESLIE HALE was uneasy that we should go on dropping bombs during this long-term research. Dr. BARNETT STROSS pointed out that the committee had gone out of their way to warn us about luminous watches and X-ray machines for shoe-fitting. If we had given them different terms of reference he could imagine what they would be saying to us about the danger of an expansion of bomb tests. Between the lines of the report he found grave disquiet.

Mr. TURTON, in his concluding speech, suggested that the country should appreciate what the report said without undue exaggeration or undue complacency. So far as external radiation went the committee had told us that the danger from diagnostic X rays was 22 times greater than from fall-out from experiments. Radioactive strontium seemed to him the greatest peril. But taking the amount of radioactive strontium which was regarded as dangerous as 100 units, the amount so far attributable to the fall-out from the bomb tests was 1 unit. If the rate of firing increased he admitted that the danger would grow greater. Dr. SUMMERSKILL asked if the rate of firing had not in fact increased during the last few weeks, and Mr. TURTON replied that the committee were not talking of a rate of firing over weeks but over years. If the rate of firing increased, then in some 80 years there might well be danger. Meanwhile, as the Prime Minister had repeatedly stated, the Government were prepared to "discuss methods of regulating and limiting test explosions which take account of their own position as well as that of other Powers."

Turning to the hazards of industrial and medical radiation, Mr. Turton had more specific measures to put forward. Firms using radioactive isotopes were visited by the Factory Inspectorate to ensure that precautions were adequate, and an advisory booklet, *Precautions in the Use of Isonising Radiations in Industry* had been issued. In 1947 regulations were made under the Factories Acts to protect the workers in factories using luminous compounds. More general regulations covering other uses of radioactive substances and irradiating apparatus in factories were in draft, and would be published early next year. Standards of protection for medical workers were drawn up by the British X-ray and Radium Protection Committee, which was set up in 1921, and had been periodically revised. The Radioactive Substances Advisory Committee, under the chairmanship of Sir Charles Darwin, had prepared a comprehensive code of practice for use in the National Health Service hospitals and were considering whether it should be modified or supplemented in the light of the report of the Medical Research Council. To assist in carrying out protective measures in hospitals and in industry, a Radiological Protection Service had been set up by the Ministry of Health and the Medical Research Council, and that was continuing and extending the work carried out for many years by the National Physical Laboratory. The Government had decided to appoint as soon as possible a special committee composed of scientists and professional men to review the present practice in diagnostic radiology and in radiotherapy. He and the Secretary of State for Scotland would appoint the committee after consulting the royal medical colleges and corporations, the British Medical and Dental Associations, the Faculties of Radiology and Dentistry, and other professional bodies. Lord Adrian had consented to be the chairman.

The report's suggestion that irradiation from such sources as pedoscopes, luminous watches and clocks, and television apparatus should be reduced was under review by a panel of the Radioactive Substances Advisory Committee. For future genetic studies, more detailed information when births, marriages, and deaths were registered was essential. Detailed recommendations would be discussed with the Registrar-General. The committee itself was to re-assemble after the summer recess to consider and submit to the Medical Research Council its recommendations for future work. In recent years, the Medical Research Council had sponsored a substantial programme of research, including the genetic effects, for more than ten years. Their present expenditure on this was about £400,000 a year. It was clear that a considerable expansion would be needed if the potentialities of nuclear energy were to be exploited with confidence and safety, and the Government regarded this as a matter of high priority.

Involuntary Patients

On July 10 in an adjournment debate Dr. DONALD JOHNSON returned to the question of the admission of these patients to mental hospitals. Last week in a written answer[1] he had been informed that of 20,000 people annually put into mental hospital against their will only 15% had been under outside observation in hospital beds. This meant, he pointed out, that some 17,000 people were swept up, mainly on summary reception orders, and detained in mental hospitals for up to a year on the opinion of two or three people who though of official and professional status were as liable to make mistakes as anyone else.

Our mental hospitals, Dr. Johnson continued, were overcrowded. In the present economy situation the amount of new accommodation we could build was limited. A more practical and economic way of solving the problem was surely to exercise more discrimination over admissions. This, he suggested, could be done by setting up observation wards in general hospitals where patients could be watched by general physicians in surroundings as detached as possible from mental illness. Such surroundings would provide a respite during which

1. See *Lancet*, July 7, 1956, p. 41.

the patient could surmount an acute crisis and resume his place in the community without having acquired the stigma of having been an inmate of a mental hospital. In support of this view he cited the figures given by the London County Council to the Royal Commission.

Of the 4746 patients admitted to the L.C.C. observation wards in 1953, 1274 (or about a quarter) were discharged at the end of the 17-day observation period; a further quarter were admitted to mental hospitals as voluntary rather than involuntary patients.

To be forcibly put into a mental hospital was a distressing experience. The section-16 procedure, under which most people were sent, was a direct inheritance from the Victorian poor-law arrangements. It could only be softened by the establishment of proper observation units.

Miss PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry of Health, protested that Dr. Johnson had done less than justice to the great work that had been done towards removing the stigma from our mental hospitals. The success of the work was shown by the increase in voluntary patients—75% in 1955 compared with 51% in 1946.

She also thought a misconception had grown up owing to the custom of referring to the accommodation provided under section 20 of the Lunacy Act, 1890, as "observation wards." This section was intended to provide for emergencies where the patient had to be promptly removed for the public safety or for his own welfare. Its purpose was not to provide a period during which the mental condition of the patient should be observed. She realised that professional opinion about the use of section 20 had been divided for many years.

Before the National Health Service Act these patients could only be sent to public-assistance institutions, but by the end of 1954 there were 71 mental hospitals, 43 mixed hospitals, and 26 general hospitals to which people could be sent compulsorily under section 20. In 1954, under section 20, 24,470 patients were admitted to these hospitals (7141 to mental hospitals, 7638 to mixed hospitals, and 9691 to general hospitals). Of those sent to the mental hospitals 82·2% remained in hospital but only 24·8% were certified. Of the patients sent to the other hospitals 59·9% were transferred to mental hospitals and 35·1% were certified. From these figures it seemed that the proportion of voluntary patients was higher among the admissions to mental hospitals than among the admissions to other hospitals. Dr. Johnson's suggestion that the use of section-20 accommodation in other than mental hospitals would reduce the number of admissions to mental hospitals particularly of certified patients did not therefore seem to be borne out by the facts.

There was, she added, no lack of sympathy with these patients. Domiciliary work by local authorities had been extended so that they could obtain early psychiatric advice and treatment in their homes. The whole trend was to help them to avoid becoming certified. She did not think that the patients' best interests would be served by reducing in mental hospitals the importance of voluntary treatment or by moving away from the new approach whereby people looked upon mental hospitals as somewhere where they could go for treatment and where only in absolute necessity would they be certified.

QUESTION TIME

Doctors' Remuneration

Lieut.-Colonel MARCUS LIPTON asked the Minister of Health on what grounds he refused to disclose the increases in doctors' pay asked for by the British Medical Association?—Mr. R. H. TURTON: Because, so far, there has been no claim published by the profession. The communication on this subject has been only in the form of a preliminary memorandum sent to my department and to that of the Secretary of State for Scotland. To this a reply has now been sent stating that, in present circumstances, we would not feel justified in giving consideration to any claim for a general increase in medical remuneration.—Lieut.-Colonel LIPTON: Before we can decide whether that reply was justified or not, can we not be told what the doctors asked for? Why all this secrecy? If trade unionists want something the whole world knows about it; why cannot we be told what the doctors want?—Mr. TURTON: There has been no claim published by the profession. As I said last week, I must act in accordance with what I believe is the proper procedure in this matter and not anticipate publication when I have received what is in fact only a draft memorandum.

Mental Defectives

In answer to a question, Miss PATRICIA HORNSBY-SMITH, said that at the end of last year 6909 mental defectives were awaiting admission to hospital. In the current programme there were 4400 beds for mental defectives.

Public Health

Examination of Water-supplies

FEW of the products of Her Majesty's Stationery Office have won their laurels as standard textbooks, but there is, as far as we know, no substitute for *The Bacteriological Examination of Water Supplies*, the third edition of which has just been published.[1] In it the medical officer of health, the sanitary inspector, the bacteriologist, and the water engineer will find all that they may reasonably want to know on this subject. As before, its especial virtue lies in the emphasis laid upon the essential principles: the value of frequent simple tests rather than occasional more complex ones; the overriding importance of reconnaissance on the ground; the common-sense aim at what is practicable rather than what is ideally desirable. The new edition is the work of a committee of the Public Health Laboratory Service and the members have done their work well.

A whole section is now devoted to obtaining water samples, a procedure so simple that it is often bungled. Seeing that most water-supplies in this country are tested less often than they should be, it is a pity that more concrete suggestions have not been made about the frequency of sampling. It is not the great city or the hamlet whose water-supply is tested too seldom but the town with a population of ten to a hundred thousand. It should not be difficult to make some suggestions based upon the population served which might be a stimulus to local authorities too complacent in these things. On the subject of the examination of water in swimming-baths, the committee is perhaps more dogmatic than the facts warrant. The main source of pollution is from the bathers, and since their numbers may vary from none to several hundred within an hour the only form of bacteriological investigation likely to be of value is some (hitherto undescribed) system which yields a continuous record of the number of bacteria in the circulating water. Perhaps the committee has also accepted too readily the idea that the number of bacteria in well-chlorinated water has a bearing on the occurrence of disease among the bathers.

In the chapter on the *Clostridium welchii* test (would it not be better to name it from its innovator, the late W. J. Wilson?[2]) it is assumed without question that the results are due to *Cl. welchii* and not to some other members of the genus. And is the "stormy clot reaction" really diagnostic of *Cl. welchii*? A footnote calls attention to the suggestion of Jameson and Emberley that Teepol may be substituted for bile-salts in culture media.[3] It seems unwise for an official publication to mention this until more is known about the method.

Experience suggests that the previous editions of this book have not been so well known as they should be. The fallacy that a single test of any water-supply is enough to class it as bad or good prevails not only among the laity but among many responsible for the public health. The new edition is so cheap that there is no reason why everyone to whom a pure water-supply is a matter of concern should not own a copy—and read it.

1. The Bacteriological Examination of Water Supplies. Ministry of Health and Ministry of Housing and Local Government. Reports on Public Health and Medical Subjects, no. 71. 3rd ed. H.M. Stationery Office. Pp. 52. 2s. 6d.
2. Wilson, W. J. British Waterworks Association official circular, no. 96. 1931.
3. Jameson, J. E., Emberley, N. W. *J. gen. Microbiol.* 1956 (in the press).

Poliomyelitis

Uncorrected notifications of poliomyelitis in England and Wales during the week ended July 7 (27th week of the year) were as follows: paralytic 72 (47), non-paralytic 42 (34); total 114 (81). This is an increase of 33 compared with the previous week, the figures for which are shown in parentheses. Up to and including the 27th week 946 cases were notified—the third highest total for this period since 1947.

Maternity Services in Liverpool

In Liverpool attendances at antenatal clinics fell from 4534 in 1954 to 3575 in 1955. In his annual report, Prof. A. B. Semple, the medical officer of health, ascribes this decline largely to increase in hospital confinements and the local hospitals' practice of inviting general practitioners to provide antenatal care. Some practitioners now conduct a weekly antenatal clinic for their own patients; others do not, and expectant mothers attend at ordinary surgery times. There is, adds Professor Semple, still much scope for mothercraft education; and "a more satisfactory hospital, general practitioner, local health authority clinic co-ordinated service would be to the advantage of the expectant mother."

Last year 4700 women were delivered in their homes. The average case-load of domiciliary midwives has decreased to 70 a year.

Deaths in 1955

According to provisional figures issued by the Registrar-General,[1] deaths from cancer of the trachea, bronchus, and lung in England and Wales in 1955 numbered 17,271, compared with 16,331 in 1954. Deaths from coronary and arteriosclerotic heart-disease totalled 70,596, compared with 66,901 in the previous year. Of the infective causes, respiratory tuberculosis accounted for 5837 deaths (7069 in 1954), poliomyelitis for 241 (112), diphtheria for 13 (9), whooping-cough for 88 (139), and scarlet fever for 21 (27). The totals for whooping-cough and scarlet fever are low records. Of accidental causes, motor-vehicle accidents accounted for 4922 deaths (4589 in 1954), accidental poisoning for 1173 (1032), and burns for 817 (781).

1. Births, Deaths, and Marriages, Infectious Diseases, Weather, Population Estimates: Quarter ended March 31, 1956. H.M. Stationery Office. Pp. 32. 1s. 6d.

Births, Marriages, and Deaths

BIRTHS

BARSHAM.—On July 14, at the Maternity Hospital, Birmingham, to Betty (formerly Dr. Thomas), wife of E. S. Barsham—a daughter.

DEATHS

DICK.—On July 14, at Oxford, after a short illness, James Orford Wallace Dick, M.B., of Ladygrove House, Abingdon, Berks.

Appointments

FRANCIS, H. W. S., M.B. Camb., D.P.H.: asst. M.O., Bristol.

University College Hospital, London:

EMERY, E. W., M.B. Brist., F.F.R., D.M.R.T.: consultant radio-therapist.

O'DONOGHUE, D. M., M.B. N.Z., F.F.A.R.C.S., D.A.: consultant anæsthetist.

WALTERS, J. H., M.D. Camb., M.R.C.P.: consultant physician, Hospital for Tropical Diseases.

South-Western Regional Hospital Board:

HEWITT, MARK, M.B. Lond., M.R.C.P.: consultant dermatologist, West Cornwall clinical area.

LYON, H. F., M.B. Edin., M.R.C.P.E., D.T.M.: asst. physician (geriatrics), Manor Park Hospital, Bristol.

MACMAHON, BRIAN, M.D.N.U.I., M.R.C.P.I.: senior medical registrar, West Cornwall clinical area.

MATHER, H. G., M.D. Camb., M.R.C.P.: consultant physician, Bristol clinical area.

TOOMEY, A. G. G., B.SC., M.R.C.S., D.M.R.D.: consultant radiologist, North Gloucestershire clinical area.

Colonial Appointments:

BOSE, S. C., M.B. Calcutta, F.R.C.S., D.OBST., D.P.H.: specialist obstetrician and gynæcologist, Gold Coast.

CLARKE, J. H. C., M.D. Edin., D.P.H., D.T.M. & H.: D.M.S., Cyprus.

DOS SANTOS, W. A., M.B. Lond.: pathologist, Federation of Nigeria.

NICHOLSON, C. C., M.B. Edin., D.P.H.: A.D.M.S., British Guiana.

Obituary

DONALD PAGE LAMBERT
M.D. Edin., D.T.M. & H., D.P.H.

Dr. D. P. Lambert, who, after a distinguished career in the Indian Medical Service, became in 1948 medical officer of health for North Craven, died on July 12 while on holiday in Devon.

He came of a Yorkshire family, but he was himself born and brought up in Scotland, going to George Heriot's School in Edinburgh and studying medicine at the university there. After graduating M.B. in 1925 he joined the I.M.S. and for the next eight years he served with the Army in different parts of India. In 1934 he transferred to the civil side, and he became in turn civil surgeon at Saharanpur, Allahabad, Fyzabad, and Meerut. During these years he specialised in forensic medicine and in 1937 he published a useful and practical handbook on the *Medico-legal Post Mortem in India*.

At the beginning of the war in 1939 Lambert was drafted to the North-West Frontier, and for his work there he was awarded the Frontier medal. In 1941 he was put in charge of the medical wing of the tactical school at Poona. His responsibilities stretched beyond India to the North African and North Burma theatres of war, and his experience in this post led to his promotion to the rank of colonel and appointment as A.D.M.S. in the Arakan. Of his work there C. F. J. C. writes:

Lambert came to the Arakan at a difficult time, difficult not only because the division had its back to the wall, but because the medical units were having their own difficulties. To the harassed C.O. of a much overgrown C.C.S., his visits were a refreshing boon. He never came with petty criticisms: usually he arrived covered with dust having driven back to us from the R.A.P.S. A man of few words, he praised where he could, confined his rare criticisms to a few trenchant phrases, and never left without telling us what above all we needed to know—how many casualties to expect and when to expect them. His visits were never visitations and never lasted more than a few minutes. You work for a man with those qualities. His sheet-lightning castigation of all things insincere or pompous shone through all his doings and illuminated the standard which he set himself. Whatever he set his hand to, whether to administration or to Alpine plants, he did with intensity of purpose and singleness of heart.

After the withdrawal from the Arakan front Colonel Lambert became A.D.M.S. to a training division for jungle warfare in Burma, medical director of a reception camp for repatriated Indian prisoners-of-war in Norfolk, commanding officer of a base hospital at Deolali, and A.D.M.S. for the Bombay district.

In 1946 he retired from the I.M.S. and, after taking the D.P.H. at Edinburgh, he was appointed M.O.H. for North Craven in 1948. In the last ten years he had won himself an established place in the life of the district. He held public health to be "the most fascinating, as it is the most difficult, of all the special branches of medicine," and the letters which he regularly contributed to our columns ranged shrewdly over many administrative and medical issues. His annual reports never failed to stimulate, and were a yearly demonstration of the triumph of literary skill over statistics. His last report, which appeared only a few weeks ago, opened with a neat quotation from Izaak Walton—"Look to your health; if you have it, praise God, and value it next to a good conscience." Writing was indeed one of Lambert's chief interests; he had published a volume of poems and he had lately written some plays. His other hobby was Alpine plants and in his garden at Giggleswick he had gathered a remarkable collection. R. B., a friend who knew him as a gardener rather than as a doctor, writes:

He had a great love of mountain plants and had acquired a remarkable knowledge of them during the past few years, when he grew so many unusual and difficult species in his small garden. As in all things, his taste was discerning, and he only grew the best. He was a wonderful correspondent and a great friend whom we shall most sadly miss.

Dr. Lambert married in 1935 Miss Gwendoline Linsley, of Keighley. She survives him with one son who is a medical student at the University of Edinburgh.

Notes and News

NURSES AND ANCILLARIES IN THE SERVICES

THE Waverley Committee have already reported on the supply of medical and dental officers to the Armed Forces [1]; and they now deal with the nursing and ancillary services.[2] They point out that Service doctors and dentists cannot work to full advantage unless supported by "a properly organised, thoroughly trained and contented staff."

Having previously advised against amalgamation of the medical branches of the three Services, they naturally do not recommend amalgamation of the nursing staffs. Nursing officers in the Royal Navy have civilian status, and the committee do not wish to change this; but they think that the nursing corps of the Navy and Royal Air Force should (like that of the Army) include an "other rank" element. Nursing officers should attend refresher courses at civilian hospitals; whatever their employment, those who qualify as specialists should receive specialist pay; and the grading of certain posts requires review. In the Navy the proportion of regular nursing officers is probably too low; the R.A.F. needs to induce more short-service officers to take regular commissions; and the Army has a deficiency of 530 nursing officers. Rates of pay compare favourably with those of nurses in civilian hospitals, and the Service departments should take steps to remove the mistaken notion that nursing officers do very little bedside nursing. With tours of duty overseas Service nurses can in fact acquire unusually wide all-round experience. But, because the quality of the subordinate nursing staff is lower than in comparable civilian hospitals, they have to supervise their assistants more closely and at times undertake minor unskilled work.

In numbers there is no serious shortage of male nursing staff; but the Army and R.A.F. have a large preponderance (65–70%) of National Servicemen. "An arrangement by which most of the staff are turned over every two years is unsatisfactory and ought to be brought to an end as soon as possible." The committee also urge the Army authorities to see whether the present allocation of recruits to the R.A.M.C. could not be improved. Long-service regulars should be encouraged to train in the Service up to S.R.N. standard, and in the Army, they should be allowed to continue on nursing duties even after promotion to warrant rank. State-registered nurses should be automatically transferred to the highest Army trade group—(X). There is scope for the recruitment of older as well as younger women as nursing assistants and as wardmaids. Plans should be made to provide in Service hospitals the additional training facilities likely to be required for the S.R.N. and S.E.A.N. qualifications.

In the Services specialised and technical staffs have not advanced, in status and standards of skill, as they have done elsewhere in the past 20–30 years. The Army and R.A.F. should recruit regulars technically qualified in civil life and should train more regulars to civilian standards. The revised basic pay rates are reasonable; but prospects need to be improved, and the committee make recommendations to that end. The Army, it is suggested, should not recognise a lower standard of qualification for dental hygienists than that acceptable to the Ministry of Health; and arrangements should be made for selected regulars in the Army and R.A.F. to be trained as chiropodists in civilian schools. More women should be employed on specialised and technical duties and technical sections should be formed in the nursing corps of the Navy and Army and in the W.R.A.F.

"The Services should constantly seek to adapt their organisation and methods of work so as to transfer administrative duties from medical to non-medical officers." All of them should grant commissions to selected members of specialised and technical staff on an establishment basis, and at age 30–35. The Army should "make available a higher proportion of permanent commissions for specialised and technical officers than they do for other non-medical officers."

E.B.S.

EXPERIENCE has shown that when the usual pre-Christmas decline in demand on the Emergency Bed Service does not take place, a busy time lies ahead. Last year the validity of this portent was again evident: just before Christmas the demand was unabated, and afterwards applications rose rapidly to 1800 a week by Jan. 10, after which they remained between that figure and 1400 until the end of the first week in March.[1] The number of applications was not the largest in the service's history; but it had exceptional difficulty in finding the necessary empty beds. "All whom it was deemed essential to admit were indeed admitted, but the proportion of cases forced into hospital under the medical referee procedure rose to unprecedented heights." The causes apparently included a natural unwillingness to clear beds by discharging into the very cold weather patients who had had respiratory disease, and also shortage of nurses. "In addition it seems possible that the increased number of beds set aside for special purposes has unduly reduced the number available for general emergencies. At the same time the hospitals' constant endeavour to maintain a high occupancy must inevitably reduce their ability to take in unexpected emergency cases." A further difficulty has been the prejudice of some hospitals against "E.B.S. cases." Yet, again and again (last in February, 1956) it has been found that cases received via the E.B.S. are no less likely to be suitable for admission as acute emergencies than cases offered by the general practitioner in person.

CHARTERED SOCIETY OF PHYSIOTHERAPY

LAST year the Chartered Society of Physiotherapy celebrated its diamond jubilee; and the council has now reported on the year's activities [2] with a vivacity that compilers of other such records might emulate. The society was granted a Royal charter thirty-six years ago. Since then 21,117 persons have become chartered physiotherapists, and, of these, 15,257 are still on the society's verified register. The report refers regretfully to the slowness of progress towards State registration. On the other hand, the society is well on the way to achieving a revised charter and by-laws. The report makes clear that no change in the relation of physiotherapist to doctor is proposed. "Changes in the wording of the Ethical Byelaw governing the relationship of physiotherapist and doctor are intended to clarify, not to alter it. The Society was established on the fundamental principle that physiotherapists should treat only those patients referred by a registered medical practitioner. That principle is held as firmly now as when it was first adopted. Many doctors do, in fact, give a large measure of discretion to physiotherapists, but every doctor is ultimately responsible, legally and morally, for patients in his care and so must have the right, if he wishes, to prescribe treatment, even, again if he wishes, in detail."

University of Cambridge

The following degrees have been conferred:

M.D.—A. S. MacKenzie.

B.Chir.—R. E. C. Altounyan, G. W. Arthur, K. D. Austin, Jean R. C. Bain, R. T. Barnie-Adshead, P. C. Barrington, J. R. Batchelor, D. E. R. Bateman, M. F. Beard, J. A. Bessell, P. C. Bewes, Eleanor M. Bray, Gordon Brocklehurst, A. C. Brown, H. C. I. Bywater, J. M. Cairns, Raymond Carlisle, D. A. Chamberlain, Gordon Cohen, M. R. Colwill, F. G. Cooper, Victor Cope, P. W. M. Copeman, J. K. Dauncey, H. J. Davies, A. G. Dawrant, D. W. Downham, M. H. M. Dykes, S. G. Elkington, T. G. Evans, D. J. Fairclough, G. W. M. Faris, C. J. Farrer, B. W. K. Fayle, M. L. Fenner, C. A. Fox, T. A. Fox, G. R. Fraser, M. A. R. Freeman, M. J. P. Furniss, G. B. Gasson, I. I. Gaston, Jennifer M. D. Gibson, D. A. Gilchrist, P. F. Gray, A. L. Gunn, J. F. Harrison, F. R. Hilbourne, O. W. Hill, Elizabeth D. Hocking, R. S. Hole, T. W. Hoskins, D. H. Hull, C. J. B. Hundleby, Charles Hunnybun, W. E. Ince, A. M. C. Jennings, J. K. L. Jones, N. F. Jones, Pauline M. Jones, Frances J. Keegan, J. J. Key, N. D. Kilpatrick, Patsy J. M. Lachelin, P. J. Lachmann, B. E. Lomax, J. T. Mainwaring, Peter McCormack, William McConnachie, J. B. B. Milne, W. R. Moore, P. D. Mulcahy, D. P. Mullan, Roger Murphy, A. D. G. Nicholas, R. K. L. Percival Smith, G. M. Petrie, T. R. Preston, J. L. Reed, N. C. R. W. Reid, N. S. C. Rice, F. F. Richards, J. D. M. Richards, E. R. Roberts, A. J. Salisbury, J. R. Sandford, R. E. Scott, A. J. Shaw, Brenda J. Sheail, Maurice Slapak, M. W. Sleight, M. G. Smedley, E. A. H. Smith, M. J. V. Smith, R. W. M. Smith, R. V. Stephenson, J. D. Stirland, D. A. Swales, K. A. M. C-O. Swinburne, S. G. Taylor, Jean M. Thompson, J. C. F. Townsend, R. F. Tuckett, Jean E. Vallis, Marguerite A. M. von Bergen, R. M. Wainwright, W. D. Waller, C. G. Waters, A. J. Watson, C. P. K. Watson, P. G. Watson, L. G. Whitby, H. J. O. White, G. E. G. Williams, M. G. Williams, E. G. Wooster, Nicholas Wright, W. M. A. Wright, Gordon Yates, T. W. Young.

1. The Forces Medical and Dental Services Committee, appointed by the Minister of Defence, consists of Viscount Waverley, F.R.S. (chairman), Sir Harold Boldero, F.R.C.P., Mr. S. R. Dennison, Sir Thomas Gardiner, Sir Arthur Porritt, F.R.C.S., and General Sir James Steele. See *Lancet*, 1956, i, 334.
2. Second Report of the Committee. H.M. Stationery Office, 1956. Pp. 31. 2*s*.

1. Emergency Bed Service (King Edward's Hospital Fund for London): Report for the year ended March 31, 1956. Published by the E.B.S., Fielden House, 28, London Bridge Street, S.E.1.
2. Chartered Society of Physiotherapy: Report of Council for 1955–56. Published by the society, Tavistock House South, Tavistock Square, London, W.C.1.

University of Birmingham

On June 30 the following degrees were conferred:

M.D.—J. M. Bishop (with honours); R. H. Gosling, J. A. Litchfield.

M.B., Ch.B.—Gordon Cumming, Margaret J. Darch, C. T. Dollery, W. A. Lishman (second-class honours); M. E. Abrams W. W. Alderman, R. M. Baddeley, Lavinia J. Bailey, Nirmal Chander Bhandari, M. H. Bletcher, V. A. W. Blunt, D. G. Boddington, P. H. Boyle, A. R. Brathwaite, Anthony Brickman, Mary Burman, Cecilia H. Butt, Margaret A. Calver, David Carling, Kathleen M. Cash, G. W. Chance, John Cockin, M. A. Cole, T. L. Cooksey, D. R. Cowman, M. D. Cox, D. R. Cumpsty, B. W. Davis, Dhruv Vrat Dhupa, T. C. Dixon, David Evans, C. J. Garrett, John Gelson, P. H. Grant, C. P. Gray, P. M. Green, I. F. G. Haddow, Ethel J. Harris, D. G. W. Hollands, Barbara L. Hooker, J. S. Horner, R. P. Jordan, R. A. Jupe, J. J. Kelly, Maria J. Kielbinska, M. R. Landeg, A. J. Lyne, Margaret J. McBroom, F. E. McGuinness, N. M. C. Mayne, Sadredin Mesbah, A. N. Mitra, J. P. Neasham, Rajnikant Ishwarbhai Patel, Gordon Phillips, F. J. Pickworth, Jennifer M. Radford, J. M. Rolfe, P. A. Roxburgh, S. O. Schandorf, H. G. Schroeder, P. R. Seed, E. M. Skinner, B. S. Smith, Jacqueline J. Speake, P. A. J. Starr, Jack Steinert, D. A. Stephens, Gillian H. Stilwell, J. R. Taylor, A. L. Thomas, I. D. Thompson, R. O. Walker, J. W. Warburton, G. S. Willetts, C. W. O. Windsor, H. O. Wooller, Alan Wootton, Douglas Wright.

University of Liverpool

At recent examinations the following were successful:

M.D.—D. J. B. Ashley, K. Baker, D. B. Mossman, W. R. Parkes, R. H. Roberts, J. Winter, V. Wright.

M.B., Ch.B.—R. D. Gartside, V. S. D. Logan, D. J. Weatherall (with honours); J. M. Abbott, Erika M. Adler, E. O. O. Arbenser, J. S. Bamforth, T. J. Barnett, R. F. Beckett, H. Bodsworth, P. Boggiano, B. F. Bracewell, Pauline M. Carruthers, R. Carruthers, M. D. B. Clarke, M. C. Crocker, N. Dale, H. Dinnick, W. Durrant, I. R. Entwistle, D. G. Evans, Jean M. Fell, C. Gallagher, Patricia E. Gaughan, A. A. F. Gilbertson, Sheila M. Griffin, Mary C. Hardiker, A. A. M. Hardy, Margaret O. Harrison, B. J. Hawe, G. Hughes, I. W. Hughes, D. Hull, B. E. Humphriss, J. Jakobovits, Romana A. Januszewska, P. N. Jarvis, Doris Johnson, Doreen E. Jones, K. Jones, Marjorie V. Jukes, J. Kelly, A. Kennedy, A. Kirby, Margaret A. W. Kneale, P. C. Lawson, Shirley A. Leslie, K. Longstaff, B. W. McGuinness, D. P. Manning, T. W. Murphy, June Nelson, Nora M. Norris, Heather B. Nunnerley, Margaret M. O'Kane, T. A. O'Malley, Pauline M. B. Park, D. Parker, A. Patterson, G. W. Pennington, Ruth M. Poland, D. J. Pollock, Shona H. Russell, Dorothy E. M. Speed, D. Sykes, C. A. Veys, B. A. Walker, R. A. Walmsley, R. S. Walton, J. D. Williams, Marguerite J. Williams, N. E. Williams, R. D. Williams, J. G. Winwick, P. Worthington, J. E. Wright, Ann C. Young.

D.P.H.—H. P. Burrowes, D. M. Cameron, B. Didsbury, Mary P. Haran, E. M. Hughes, D. L. Lewis, T. F. McElligott, A. McGregor, Mary A. R. Marshall, L. A. Nettleton, C. W. R. Pyne, Esther M. E. Ramsay, Myfanwy R. H. Roberts, K. P. Sivam, T. D. Thomas, Sheila M. Tyrrell, Megan E. Wilkinson.

D.M.R.D.—H. J. J. Beyleveld, R. S. Miller, V. Rogers, M. C. Winter.

D.M.R.T.—B. Lall, S. H. M. Zaidi.

University of Glasgow

On June 30 the diploma in public health was awarded to the following:

H. M. Adam, H. M. Archibald, D. D. Bryson, R. L. Duncan, G. P. A. Evans, T. J. G. Howie, Margaret G. Maclaren, W. J. McLaughlin, D. H. Paterson, J. F. Robertson, H. G. Robinson, H. C. T. Smith, W. D. Smith, D. J. W. Taylor.

Royal College of Surgeons of England

At a meeting of the council held on July 12, Sir Harry Platt was re-elected president, and Mr. A. Lawrence Abel was re-elected and Sir Russell Brock elected vice-presidents for the ensuing year. Mr. John Hosford was admitted to the court of examiners.

The following lecturers were appointed:

Joseph Henry lecture.—Mr. L. W. Plewes.

Edridge-Green lecture.—Prof. W. D. Wright.

Imperial Cancer Research Fund lectures.—Prof. Geoffrey Hadfield and Dr. C. P. Rhoads.

Hunterian professorships.—Raymond Greene, discrete nodules in the thyroid gland; D. F. E. Nash, the management of incontinence in congenital spinal palsy; Robert Cox, dysphagia due to malignant disease of the thoracic and abdominal œsophagus; J. I. P. James, paralytic scoliosis; Myer Makin, Friedreich's ataxia; F. J. Gillingham, ruptured intracranial aneurysm; Edwin Haigh, the acute abdomen in neonates; Amulya Kumar Saha, zero-position of glenohumeral joint; A. A. Jefferson, pituitary chromophobe adenomata and Rathke pouch cysts; H. J. Shaw, radical surgery in laryngo-pharyngeal cancer; R. T. Turner Warwick, the lymphatics of the breast in relation to the spread of carcinoma and its treatment.

Arris and Gale Lectures.—G. W. Causey, cytological investigations with the electron microscope; P. P. Rickham, metabolic response to neonatal surgery; D. G. Walker, facial development.

Erasmus Wilson demonstrators.—G. T. Allen, F. C. Chesterman, L. W. Proger, A. J. M. Reese, H. G. H. Richards, J. B. Walter.

Arnott demonstrators.—Miss Jessie Dobson, B. E. Greenfield, Prof. R. J. Last, R. M. Livingston, Frank Stansfield, B. D. Wyke.

Royal College of Physicians of Ireland

At a meeting of the college on June 6, with Dr. F. J. O'Donnell, the president, in the chair, Dr. A. M. Cantor was admitted to the membership and H. K. Takyi to the licentiateship of medicine and midwifery.

Royal College of Surgeons of Edinburgh

At a meeting of the college held on July 11, with Sir Walter Mercer, the president, in the chair, the following were admitted to the fellowship:

Mohammed Mahmoud Abu-Sittah, Rasul Bux Baluch, Manohar Lal Bhaggana, W. G. Bowes, M. N. Ellis, R. M. Gibson, J. D. Green, Bertram Hammar, A. A. Hooper, D. W. H. Hurley, W. F. Kerr, W. G. Lucas, K. A. McCluskey, Ian McKechnie, Ishaq Khalil Mikhail, Revanasiddappagouda Basappagouda Patil, Henry Roberts, D. E. Rothery, Robert Shannon, D. T. Thompson, W. G. Thomson, J. C. Wardill, G. I. Young.

Scottish Conjoint Board

At recent examinations for the license of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow the following were successful:

Mustafa Nuri Birsel, Cho-Man Chung, J. F. Corr, Albert Dasen, R. G. FitzPatrick, Edgar Tsu Teh Hu, Peter Jago, J. P. King, G. M. Lorde, I. F. Lundy, Kwat Sin Pauw.

Faculty of Radiologists

The following have been elected officers for 1956–57:

President, Dr. Whately Davidson; vice-presidents, Dr. L. G. Blair and Dr. Constance Wood; warden of the fellowship, Dr. E. Rohan Williams; hon. secretary, Dr. R. A. Kemp Harper; hon. treasurer, Prof. D. W. Smithers; hon. editor, Dr. T. Lodge.

Scottish Society of Anæsthetists

The following officers have been elected for 1956–57:

President, Dr. H. Bruce Wilson; vice-president, Dr. R. Lawrie; hon. secretary, Dr. A. G. Miller; other members of council, Dr. F. G. Gibbs, Dr. J. W. Levack, Dr. F. Holmes, Dr. W. Auld, Dr. J. R. Kyles, Dr. W. Christie, Dr. H. Fairlie.

The society's prize for the best paper submitted by an anæsthetist of senior-registrar grade or below was awarded to Dr. David B. Murray.

National Register of Medical Auxiliary Services

The Board of Registration of Medical Auxiliaries has published new editions of its registers of chiropodists and of orthoptists. Copies will be supplied free to doctors and to hospitals and other employing authorities on application to the registrar of the board, B.M.A. House, Tavistock Square, London, W.C.1. To others the price of the registers is 10*s.* and 5*s.* respectively, post free.

R.A.F. Medical and Dental Branches

The annual dinner of these branches will be held on Friday, Nov. 16, at the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2, at 7.30 P.M. Applications for tickets (30*s.*) should be sent to the hon. secretary, R.A.F. Medical and Dental Services Dinner Fund, Air Ministry (M.A.3), 2–8, Richmond Terrace, Whitehall, S.W.1.

Institute of Psychiatry, London

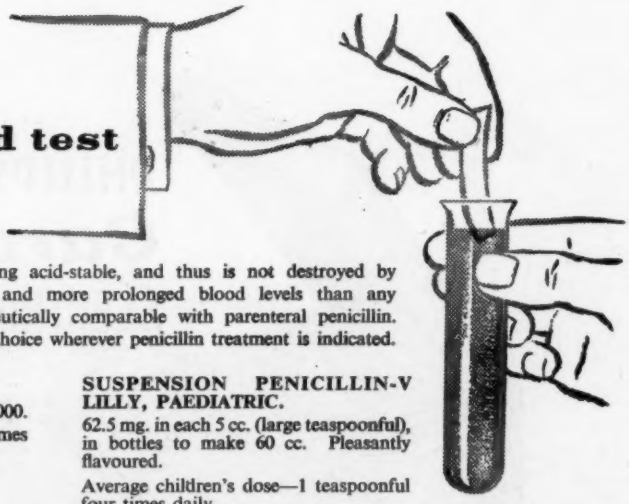
On Tuesday, July 31, at 5 P.M., Dr. J. Wolpe, of the University of Witwatersrand, will give a lecture on the relationship between experimental neurosis and psychotherapy. On Tuesday, Aug. 7, at NOON, Dr. Manfred S. Guttmacher, chief medical officer of the medical service of the Supreme Branch of Baltimore, will speak on problems of legal psychiatry in America. On Thursday, Aug. 9, at NOON, Prof. Carl C. Pfeiffer, of Emory University, Georgia, will discuss muscarinic stimulation of the brain in relation to conditioned response and schizophrenia. All the lectures will be held at the Maudsley Hospital, Denmark Hill, S.E.5.

New Principal Medical Inspector of Mines and Quarries

The Minister of Fuel and Power has appointed Dr. J. M. Davidson to be H.M. Principal Medical Inspector of Mines and Quarries in succession to the late Dr. J. B. Adamson.

Dr. Davidson, who is 53, was educated at the Royal High School, Edinburgh, and at Edinburgh University, where he graduated M.B. in 1925. After spending four years in general practice (three in mining practice) he took the D.P.H. in 1930 and joined the public-health services. He took the M.D. in 1931, and in 1934 he entered the Civil Service as one of H.M. medical inspectors of factories. In 1948 he was appointed principal medical officer in the Ministry of Pensions and National Insurance, where he was in charge of the medical division, dealing with questions arising out of the Industrial Injuries Scheme (Diseases) and the pneumoconiosis medical panels. In 1944, he was seconded for a year to the New Zealand government as adviser in industrial hygiene to help in the organisation of an industrial-health service. Dr. Davidson is a life member of the Permanent Committee on Industrial Medicine.

CORRIGENDUM: *Encephalomyelitis simulating Poliomyelitis.*—Dr. W. A. Cobb, consultant in charge of the department of applied electrophysiology, National Hospitals for Nervous Diseases, wishes us to state that the electroencephalogram in our issue of May 26 (p. 762) was not made in his department, as readers might have supposed from the authors' acknowledgments.



passes the acid test

Penicillin-V, Lilly, is unique in being acid-stable, and thus is not destroyed by gastric secretions. It gives higher and more prolonged blood levels than any other oral penicillin, and is therapeutically comparable with parenteral penicillin. Penicillin-V, Lilly, is the product of choice wherever penicillin treatment is indicated.

Available as :

'PULVULES' PENICILLIN-V LILLY, 125 mg. In bottles of 12, 100, 500 and 1,000. Average adult dose—1 capsule four times daily, increased in severe infections.

SUSPENSION PENICILLIN-V LILLY, PAEDIATRIC.

62.5 mg. in each 5 cc. (large teaspoonful), in bottles to make 60 cc. Pleasantly flavoured.

Average children's dose—1 teaspoonful four times daily.

Lilly TRADE MARK

ELI LILLY & COMPANY LIMITED
BASINGSTOKE • HANTS

PENICILLIN-V Lilly
suitable for all age groups

Diagnosis: Obstinate eczema of the face. Photograph taken before treatment with "F99".

Photograph taken after 18 weeks' treatment with one "F99" capsule and one application of "F99" ointment daily.

℞ F99 for

OINTMENT
CAPSULES
LIQUID

ECZEMA
VARICOSE ULCERS
FURUNCULOSIS etc.

It has been shown beyond question by large scale serum-lipids studies that a good proportion of patients suffering from intractable skin conditions have a deficiency of the essential fatty acids. It is not possible to carry out these studies in everyday practice, but any patient with eczema or furunculosis who fails to respond to symptomatic treatment should most certainly be tried with essential fatty acids "F99." A high proportion of these patients will be found to respond.

In gravitational ulcers, where the skin is "under-nourished," the application of additional essential fatty acids rarely fails to heal the wound.

Literature on request

INTERNATIONAL LABORATORIES LTD. *Dept. LT29,* **205, HOOK ROAD, CHESSINGTON, SURREY**

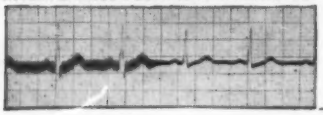
PHILIPS
Cardioluxe
ELECTROCARDIOGRAPH

PORTABLE

DIRECT WRITING

SINGLE CHANNEL

INTERFERENCE POSITIVELY ELIMINATED



By simply rotating a control all A.C. mains interference can be positively eliminated.

INSTANTANEOUS RECORD — A heated stylus, in contact with a thermo-sensitive paper, produces *immediately* visible records.

CLEAR DEFINITION — The high writing sensitivity of the paper ensures that the records are produced with great clarity.

EXTREME FIDELITY — Precision electronic design guarantees faithful reproduction. No need to be compared with so called photographic standard.

Write or telephone for Leaflet 'M'

PHILIPS ELECTRICAL LTD.

ELECTRO-MEDICAL DEPARTMENT

Century House · Shaftesbury Avenue · London WC2 · GERrard 7777

(PEM0121C)

Cuts plaster

but it won't cut skin

This Desoutter instrument was developed specially to make the removal of surgical plasters a fast and safe operation — safe for both patient and operator. The circular saw does not rotate, it oscillates through an arc only a few degrees wide at about 18,000 strokes per minute. This ultra rapid short stroke movement will not cut when it is in contact with mobile skin or soft material. But when up against hard materials like plaster it is an extremely efficient cutter. Please write for the leaflet which explains the method of use.

Desoutter CAST CUTTER

Desoutter Bros., Ltd., The Hyde, Hendon, London, N.W.9 Telephone: Colindale 6346 (5 lines). Telegrams: Despnuco, Hyde, London

CRCI 5M.

When they're convalescing

A little

MOUSSEC

does them a lot of good

Moussec is a perfect natural sparkling stimulant for cases of mental depression, debility and general apathy. Produced only from specially selected grapes by the entirely natural process of double fermentation and free from fortification by any form of spirit it is purity and goodness itself.

THE BABY BOTTLE (ONE-GLASS SIZE) is both adequate and economical. It ensures that the patient gets the benefit of Moussec always in its freshest, most sparkling form.

Baby Moussec is obtainable from all Wine Merchants and Licensed Grocers at 2/3. There are also larger sizes at 4/4, 8/9 and 16/6.

MOUSSEC LTD RICKMANSWORTH HERTS.

Alpha tocopherol (Vitamin E) for CARDIOVASCULAR-RENAL DISEASES

The natural vitamin E available only since 1948 must not be confused with the wheat germ oil in use before that date with its limitations as to potency and stability.

The natural vitamin E of today comprises a concentrate distilled from the oils of cottonseed, palm, soya bean, etc.

The standard laid down by the League of Nations is that 1 international unit = 1 mgm. of d.l. *alpha* tocopheryl acetate.

The VITA-E Gelucap (75 i.u.) heads the list of brands approved by the Vitamin E Society and is that recommended by the Shute Foundation for Medical Research and used with such conspicuous success at the Shute Institute.

LITERATURE ON REQUEST

Sole Manufacturers:

THE BIOGLAN LABORATORIES LTD.
HERTFORD, HERTS, ENGLAND.

Specialists in Hormones and Vitamins

TRUFOOD CEREAL FOOD

A PRE-COOKED CEREAL FOOD ENRICHED WITH MILK PROTEINS

The introduction of solids to baby's diet usually tends to increase the starchy portion of the diet at the expense of valuable milk proteins as well as the calcium and phosphorous salts contained in milk.

To meet this situation the vegetable protein of the oat flour in Trufood Cereal Food has been supplemented by milk proteins and the addition of valuable mineral salts. In this way the total protein has been raised to 6.05 grammes per ounce or 21.4%, and the casein and lactalbumin form a valuable complement to the biological value of the total protein.

Full details of Trufood Cereal Food and the range of other Trufood Infants Foods can be obtained from Trufood Limited, 113 Newington Causeway, London, S.E.1.

Full information available from Trufood Limited 113 Newington Causeway, London, S.E.1.

TRUFOOD

The Trufood Creameries and Laboratories are at Wrenbury in Cheshire

TFD 56-644

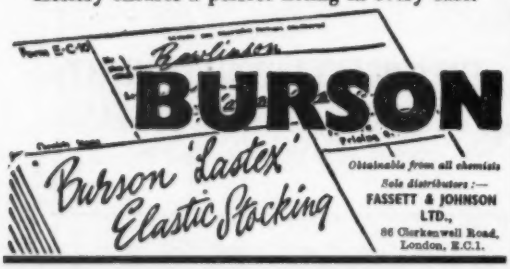
BURSON 'LASTEX'

Surgical Stockings

Specify "Burson" for Two-Way Stretch

★ Uniform tension, easily adjustable
★ Strength at points of greatest strain
★ Lightness and coolness for comfort
★ Expert fashioning for exact fitting

Burson Elastic Stockings are made from the finest 'Lastex' yarn to give them a special two-way stretch. And the complete size range of Burson Hosiery ensures a perfect fitting in every case.



A non-toxic Antiseptic Germicide

KEEDOSOL (FERRIS) provides a general antiseptic of high bactericidal potency yet possessing marked advantages not attributable to germicides of phenolic origin. It is non-poisonous, even in high concentration, non-injurious to living tissue, and its agreeable refreshing odour renders it pleasant in use. For the guidance of users of this modern germicide a table of recommended dilutions is affixed to each container.

Available in 4-oz.; 8-oz.; 16-oz.; and 80-oz. bottles and 1-gallon tins

KEEDOSOL

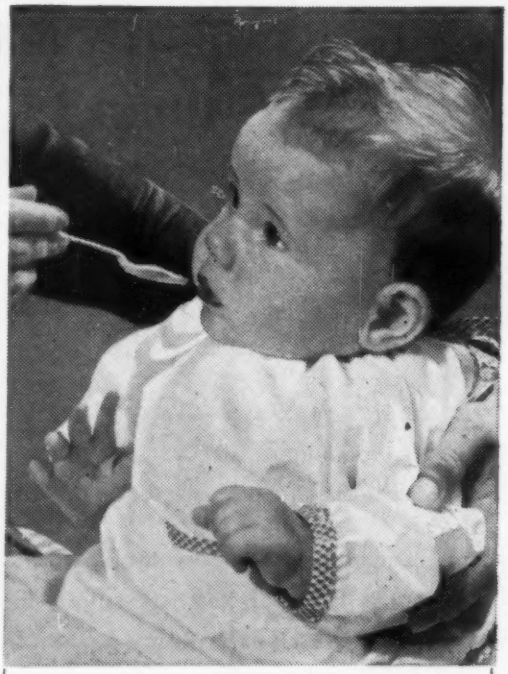
(FERRIS)

Samples on request

FERRIS & CO LTD

BRISTOL

Telephone 21381 Telegrams FERRIS BRISTOL



Canned strained foods set a mother's mind at rest

As you know, some mothers are worried when you advise early mixed feeding for baby. With so many other things to do, the difficulty of obtaining and preparing a variety of fresh foods seems almost insuperable. But Heinz Strained Foods solve the mother's problem and make it easy for her to follow your advice.

Furthermore, Heinz Strained Foods are better for baby than many home-prepared foods. Heinz get their vegetables and fruits straight from farms. And the special Heinz cooking and straining equipment preserves the maximum goodness.

So with 19 really nourishing varieties to choose from, it's easy for mother to give her baby the varied diet you recommend.

For a FREE booklet giving the nutrient values of all 19 varieties of Heinz Strained Foods, please write to Dept. 2R, H. J. Heinz Company Ltd., London N.W.10.

57 HEINZ
Strained Foods

SOUPS · MEAT BROTHS · VEGETABLES · SWEETS · CEREAL

JENNER INSTITUTE Glycerinated **VACCINE LYMPH**

PREPARED IN ACCORDANCE WITH THE THERAPEUTIC SUBSTANCES REGULATIONS (BRITISH PRODUCT)

Telephone: BATTERSEA 1347

SINGLE VACCINATION TUBES - - - 12/- dozen. Postage extra
LARGE TUBES (EXPORT only) sufficient for 5 vaccinations, 20/- dozen

Telegrams: "JENVACTER, SOUPHONE, LONDON" (2 words)

JENNER INSTITUTE FOR CALF LYMPH LTD., 73, Battersea Church Road, S.W.11

For Expectant and Nursing Mothers

IN pregnancy and lactation the administration of Lactagol is an assurance of provision for the needs of the fœtus and the mother's health, both before and after baby arrives. Lactagol supplies the proteins and minerals necessary for the milk which as a galactagogue, it produces. For forty years Lactagol has received medical approval. It is prescribed and recommended in lying-in hospitals, maternity wards of general hospitals, infant welfare centres and district nursing associations throughout the British Isles.

Lactagol

THE GALACTAGOGUE

Free testing samples are available from Infant Welfare Dept., Lactagol Ltd., Mitcham, Surrey.

THE WORLD'S GREATEST BOOKSHOP

FOYLES

FOR BOOKS

Famed Centre For

Medical Books

Depts. for Music, Stationery, Records, Handicraft Tools and Materials, Magazine Subscriptions, Lending Library, Foreign Stamps and Coins.

119-125 CHARING CROSS ROAD LONDON WC2

Gerrard 5660 (20 lines) ★ *Open 9-6 (inc. Sats.)*

Nearest Station: Tottenham Court Road

AKLOREP

(Acid HCl and Pepsin)

Achlorhydria
Hypochlorhydria
and all associated conditions.

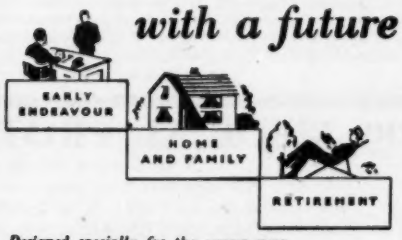
50 tablets 6/6d. (subject)
500 ,, 58/6d. ,,

Prescribe on E.C.10

ROBERTS & CO.

76, New Bond Street, London, W.1

For the young man with a future



Designed specially for the young man

'BOTH WAYS'

is more than ever the policy of the moment

Let it help to smooth *your* road through the years of endeavour ahead. You will put yourself under no obligation by writing for full details to . . .

Scottish Widows' Fund

Head Office: 9 St. Andrew Square, Edinburgh 2.
London Offices: 28 Cornhill, E.C.3. 17 Waterloo Place, S.W.1

CLIFFDEN, TEIGNMOUTH

For the early treatment of nervous disorders and patients needing rest and care

A well-appointed House with spacious balconies and extensive views of the South Devon Coast. Beautiful garden and own dairy in 35 acres In the same grounds, **ROWDENS**, a comfortable house with lovely views. Private road to the beach

There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 25 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—TEIGNMOUTH 289 and 537

ST. ANDREW'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS
NORTHAMPTON

PRESIDENT: THE EARL SPENCER

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

CHISWICK HOUSE

PINNER, MIDDLESEX

Telephone: PINNER 234

Private Nursing Home for Mental and Nervous Illness. All modern forms of treatment. Two country houses in adjoining grounds of 5 and 6 acres respectively, 12 miles from London. Trains every 15 minutes from Baker Street to Pinner.

DOUGLAS MACAULAY, M.D. D.P.M.

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All types of treatment carried out. Accommodation for Alcoholics and Addicts available. Special Geriatric Unit now open. Fees from 7 gns. per week upwards according to requirements.

Apply to Dr. J. A. SMALL Telephone: Norwich 20080

THE LANCET

Annual Subscription: £3 3 0 per annum

Special reduced rates to Medical Students and Doctors within 1 year of qualification.

THE MEDICAL PROTECTION SOCIETY LIMITED

Over 60 years experience in medical defence and protection

Complete Indemnity granted to members in cases undertaken on their behalf

ANNUAL SUBSCRIPTION: £1 for first three years for newly qualified entrants and £2 thereafter

Full particulars from the Secretary (Dr. Alistair French), Victory House, Leicester Sq., W.C.2. Gerrard 4553 and 4814

Vacancies

ACADEMIC AND EDUCATIONAL SECTION — Page 44

ADMINISTRATIVE
Northern Ireland Hosps. Auth. Asst. Admin. M.O. 46

ANÆSTHETICS
Hackney, E.9. Sr. H.O. 47
Hosps. for Diseases of the Chest. P.-t. Cons. 45
Lewisham, S.E.13. Sr. H.O. .. 47
Nelson, S.W.20. Sr. H.O. 47
Royal London Homœopathic, W.C.1. Reg. 48
Royal National T.N. & E., W. P.-t. Cons. 45
South East Met. R.H.B. Regs. .. 48
St. James', S.W.12. Locum Sr. H.M.O. 45
Wanstead, E.11. Sr. H.O. 48
Woolwich Group H.M.C. Sr. H.O.'s 48
Birmingham Accident. Sr. H.O. .. 49
Bolton & Dist. H.M.C. Sr. H.O. .. 50
Chelmsford Hosps. Sr. H.O. 50
Chesterfield Royal. Reg. 51
East Anglian R.H.B. Reg. 51
Exeter. Royal Devon & Exeter. Sr. H.O. 51
Farnborough, Kent. Sr. H.O. .. 51
Hillingdon, Middx. Reg. 52
Ipswich & East Suffolk. Sr. H.O. .. 52
Luton & Dunstable. Reg. 52
Manchester, South Manchester H.M.C. Sr. H.O. 53
Newcastle United Hosps. Cons. .. 45
Nottingham Gen. Sr. H.O. 54
Plymouth. South Devon & East Cornwall. Sr. H.O. 54
Portsmouth Group H.M.C. Reg. .. 54
Scotland. Eastern R.H.B. Sr. Reg... 55
Scotland. Northern R.H.B. Locum Sr. H.M.O. or Sr. Reg. 46
Taplow. Canadian Red Cross Mem. Sr. H.O. 56
Torquay. Torbay. Sr. H.O. 56
Warrington Infy. Sr. H.O. 56
Welsh R.H.B. Reg. 56
West Cornwall Clinical Area. Locum Sr. H.M.O.'s. 46
Wolverhampton Group. Sr. H.O... 57

CARDIOLOGY
National Heart, W.1. Sr. H.O. or Reg. 47
Scotland. Eastern R.H.B. Sr. Reg... 55

CASUALTY
Bethnal Green, E.2. Sr. H.O. .. 46
Central Middx., N.W.10. Sr. H.O. .. 46
Connaught, E.17. Sr. H.O. 46
Queen Mary's Hosp. for the East End, E.15. H.O. 47
St. Giles, S.E.5. H.O. 48
St. Mary's, W.2. Sr. H.O. 48
St. Nicholas, S.E.18. H.O. 48
Beckenham, Kent. Sr. H.O. .. 49
Brighton. Royal Sussex County. H.O. 50
Bury & Rossendale H.M.C. Sr. H.O. 50
Chelmsford & Essex. Sr. H.O. .. 50
Croydon Gen. Reg. 51
East Anglian R.H.B. Reg. 51
Hastings. Royal East Sussex. Sr. H.O. 52
Huddersfield Royal Infy. Jr. H.M.O. 52
Plymouth. South Devon & East Cornwall. Sr. H.O. 54
Southampton. Royal South Hants. Sr. H.O. 55
Southport Gen. Infy. Jr. H.M.O. .. 56
Stockport Infy. Sr. H.O. 56
Sutton & Cheam. Sr. H.O. 56
Watford Peace Mem. Hon. Clin. Asst. 57

CHEST AND TUBERCULOSIS
Brompton, S.W.3. Sr. H.O. & H.O.'s 46
London Chest, E.2. P.-t. Sr. Reg... 47
Aberdeen Gen. Hosps. B.O.M. H.O. 49
Chelmsford. Broomfield. Locum Sr. H.M.O. 45
Derby. Derwent. Reg. 51
Glasgow. Northern Hosps. B.O.M. Jr. H.M.O. & H.O... 51
Holt, Norfolk. Kelling Hosp. & Dept. of Thoracic Surgery. Locum Jr. H.M.O. & Sr. H.O... 52
Leeds R.H.B. Reg. 53
Manchester R.H.B. Sr. Reg. 53
Welsh R.H.B. Reg. 56

EAR, NOSE, AND THROAT
Westminster, S.W.1. Sr. H.O. .. 48
Aberdeen Gen. Hosps. B.O.M. H.O. 49

Hull A Group H.M.C. Sr. H.O. .. 52
Manchester. Wythenshawe. Sr. H.O. 53
Newport, Mon. Royal Gwent. Jr. H.M.O. or Sr. H.O. 54
Nottingham Gen. Sr. H.O. 53
Reading & Dist. H.M.C. Sr. H.O. .. 54
Stoke-on-Trent. North Staffs Royal Infy. Sr. H.O. 56
Wolverhampton Group. H.O. .. 57

GERIATRICS
Birmingham R.H.B. Cons. 45

HÆMATOLOGY
North London Blood Transfusion Centre. Jr. H.M.O. 47

INFECTIOUS DISEASES
Southampton Chest. Sr. H.O. .. 55

MEDICINE
Connaught, E.17. H.O. 46
Lambeth, S.E.11. Reg. 47
North Middlesex, N.18. H.O.'s .. 47
Queen Mary's Hosp. for the East End, E.15. Pre-reg. H.O. 47
South East Met. R.H.B. Reg. .. 48
St. Clement's, E.3. H.O. 48
St. Mary's Hosp. for Women & Child., E.13. Sr. H.O. 48
Aberdeen Gen. Hosps. B.O.M. H.O. 49
Aberdeen Special Hosps. B.O.M. H.O. 49
Bedford Gen. Reg. 49
Bournemouth. Christchurch. Locum Reg. 50
Colchester Group H.M.C. H.O. .. 51
East Anglian R.H.B. Reg. 51
Edgware Gen. H.O. 51
Exeter. Royal Devon & Exeter. H.O.'s 51
Gt. Yarmouth & Gorleston Gen. H.O. 51
Kingston, Surrey. Reg. 52
Leeds R.H.B. Reg. 53
Lincoln County. Pre-reg. H.O. .. 52
Manchester. Altrincham Gen. Pre-reg. H.O. 53
Nottingham City. H.O. 54
Nottingham Gen. Sr. H.O. & Pre-reg. H.O. 53
Portsmouth Group H.M.C. Pre-reg. H.O.'s 54
Reading Area Dept. of Medicine. Pre-reg. H.O.'s 54
Rochford, Essex. Gen. Sr. H.O. .. 55
Sheffield United Hosps. Reg. or Sr. H.O. 55
Woking. Victoria. Sr. H.O. 57

NEUROLOGY
Sheffield United Hosps. Reg. .. 55

NEUROSURGERY
Middlesex, W.1. P.-t. Cons. 45
Bristol. Cossham/Frenchay H.M.C. Sr. H.O.'s 50

OBSTETRICS AND GYNÆCOLOGY
Central Middlesex, N.W.10. H.O. .. 46
Forest Gate, E.7. Pre-reg. H.O. .. 47
Fulham Maternity, S.W.6. Sr. H.O. .. 47
German, E.8. H.O. 47
Hackney, E.9. H.O. & Pre-reg. H.O. 47
King Edward Mem. & Perivale Maternity. Reg. 47
Plaistow Maternity, E.13. H.O. .. 47
Princess Beatrice, S.W.5. Sr. H.O. .. 47
Ashton, Hyde & Glossop H.M.C. Sr. H.O. 49
Ayrshire Central. Pre-reg. H.O. .. 48
Barking (Maternity). Sr. H.O. .. 49
Beverley. Westwood. H.O. 49
Birmingham R.H.B. P.-t. Cons. .. 45
Birmingham. St. Chad's. Sr. H.O. .. 49
Bolton Dist. Gen. H.O. 50
Boston Gen. Reg. 50
Colchester Group H.M.C. H.O. .. 51
Derby. Derbyshire Hosp. for Women. Pre-reg. H.O. or Sr. H.O. 51
Derby. Derbyshire Royal Infy. Pre-reg. H.O. or Sr. H.O. 51
Hillingdon, Middx. H.O.'s 52
Isleworth. West Middlesex. Reg. .. 52
Leeds R.H.B. Reg. 53
Manchester R.H.B. Reg. 53
Manchester United Hosps. H.O.'s. 53
Newcastle United Hosps. Sr. H.O. .. 54
Nottingham. Highbury. Sr. H.O. .. 53
Portsmouth Group H.M.C. Sr. H.O.'s 54
Reading Combined Hosps. H.O. .. 54
Sheffield City Gen. Reg. 55
Shrewsbury. Cross Houses. Pre-reg. H.O. 55
Stockport. Stepping Hill. Sr. H.O. .. 56
Stoke-on-Trent. City Gen. Locum Reg. 56
Windsor. King Edward VII. H.O. 57

OPHTHALMOLOGY
Aberdeen Gen. Hosps. B.O.M. Reg. 48
Aberdeen Gen. Hosps. B.O.M. H.O. 49

ORTHOPÆDICS
Queen Mary's (Roehampton), S.W.15. Reg. 47
South East Met. R.H.B. Reg. .. 48
Beverley. Westwood. H.O. 49
Bournemouth. Royal Victoria. Sr. H.O. 50
Bristol United Hosps. & South-Western R.H.B. Reg. 50
Burton-on-Trent. Gen. Jr. H.M.O. 50
Croydon Group H.M.C. Reg. .. 51
Doncaster Royal Infy. Reg. .. 51
Doncaster Royal Infy. Sr. H.O. .. 51
Ipswich & East Suffolk. H.O. .. 52
Kingston, Surrey. Sr. H.O. 52
Leeds R.H.B. Reg. 53
Margate. Royal Sea Bathing. Sr. H.O. 53
Portsmouth Group H.M.C. Pre-reg. H.O. 54
South East Met. R.H.B. Reg. .. 55
South-Western R.H.B. Reg. .. 56
Watford. Peace Mem. H.O. 57
Wolverhampton Group. Reg. .. 57

PÆDIATRICS
Memorial, S.E.18. H.O. 47
Birmingham. Marston Green Maty. Sr. H.O. 49
Macclesfield. Sr. H.O. 53
Manchester R.H.B. P.-t. Cons. .. 45
Manchester. Withington. Sr. H.O. .. 53

PATHOLOGY
St. George's, S.W.1. Sr. H.O. 48
Beverley. Westwood. Sr. H.O. .. 49
Birmingham R.H.B. Cons. 45
Bury & Rossendale H.M.C. Sr. H.O. 50
Edgware Gen. Locum Sr. Reg. .. 51
Manchester R.H.B. Reg. 53
Newcastle R.H.B. Cons. 45
Nottingham. Gen. Sr. H.O. 53

PHYSICAL MEDICINE
Oxford United Hosps. Cons. .. 46
South West Met. R.H.B. Locum Cons. or Sr. H.M.O. 46

PLASTIC SURGERY
Welsh R.H.B. Sr. Reg. 56

PSYCHIATRY
Beverley. Broadgate. Jr. H.M.O. .. 49
Birmingham. All Saints. Sr. H.O. .. 49
Birmingham R.H.B. Cons. & Sr. H.M.O. 45
Birmingham. Rubery Hill. Jr. H.M.O. 49
Exeter Clinical Area. Sr. H.M.O. .. 45
Leeds R.H.B. Regs. 53
Manchester R.H.B. P.-t. Cons. .. 45
Newcastle United Hosps. Sr. H.O. .. 54
Oxford R.H.B. P.-t. Cons. 46
Scotland. North-Eastern R.H.B. Sr. Reg. 55
Scotland. Northern R.H.B. Sr. Reg. 55
Scotland. Western R.H.B. Reg. .. 55
Sheffield R.H.B. Sr. H.M.O. .. 46
Sheffield R.H.B. Sr. Reg. 55
South East Met. R.H.B. P.-t. Sr. H.M.O. 46
South East Met. R.H.B. Reg. .. 56
South West Met. R.H.B. Reg. .. 56
St. Albans. Cell Barnes. Reg. .. 56
St. Albans. Hill End. Reg. 56
Wigan & Leigh H.M.C. Reg. 56
Willerby. De la Pole. Jr. H.M.O. .. 57

RADIOLOGY
Hospital of St. John & St. Elizabeth, N.W.8. Hon. Asst. Rad. 45
Royal Northern, N.7. Reg. 48
St. Mary's, W.2. Sr. Reg. & Reg. .. 48
Bristol United Hosps. & South-Western R.H.B. Sr. Reg. 50
Liverpool United Hosps. Reg. .. 52
Oxford R.H.B. Cons. 46
Sheffield R.H.B. Sr. H.M.O. 46
Watford & Dist. Peace Mem. Reg. .. 57

RADIOTHERAPY
Liverpool Radium Institute. Jr. H.M.O. 52
Scotland. Western R.H.B. Sr. H.M.O. 46
Scotland. Western R.H.B. Sr. Reg. 55
Sheffield R.H.B. Sr. Reg. 55

SURGERY
Battersea Gen., S.W.11. H.O. .. 46
Colindale, N.W.9. Sr. H.O. 46
Highlands Gen., N.21. H.O. .. 47
Mile End, E.1. H.O. 47
North Middlesex, N.18. H.O. .. 47
Putney, S.W.15. Reg. 47
South Western, S.W.9. Pre-reg. H.O. 48
West London, W.6. H.O. 48
Ashford, Middx. H.O. 49
Barry Accident & Surgical. Sr. H.O. 49
Beverley. Westwood. H.O. 49
Birmingham Accident. H.O. 49
Birmingham R.H.B. Regs. 49
Birmingham United Hosps. Reg. .. 50
Bristol United Hosps. & South-Western R.H.B. Reg. 50
Bromsgrove Gen. Pre-reg. H.O. .. 50
Burton-on-Trent. Gen. H.O. 50
Cambridge. Addenbrooke's. H.O. .. 50
Carmarthen. West Wales Gen. Pre-reg. H.O. 50
Chelmsford & Essex. Pre-reg. H.O. .. 50
Chichester. Royal West Sussex. Sr. H.O. & H.O. 50
Colchester Group H.M.C. H.O. .. 51
Crewe & Dist. Mem. Locum Reg. .. 51
Croydon. Mayday. Locum Reg. .. 51
Dorchester. Dorset County. Reg. .. 51
East Anglian R.H.B. Reg. 51
Enfield. Chase Farm. Pre-reg. H.O. 51
Glasgow. Southern Gen. Sr. H.O. .. 51
Guildford. Royal Surrey County. H.O. 51
Haverfordwest. Pembroke County War Mem. Pre-reg. H.O. 52
Hertford County. H.O. 52
Huddersfield Royal Infy. H.O. .. 52
Hull. Victoria Hosp. for Sick Child. H.O. 52
Huntingdon County. H.O. 52
Kidderminster & Dist. Gen. Pre-reg. H.O. 52
Kingston, Surrey. Sr. H.O. 52
Leeds R.H.B. Reg. 53
Lincoln County. Sr. H.O. 52
Lincoln County. Pre-reg. H.O. .. 52
Maidstone. West Kent Gen. Pre-reg. H.O. 53
Manchester. Altrincham Gen. Pre-reg. H.O. 53
Manchester. Booth Hall Child's. Sr. H.O.'s 53
Manchester R.H.B. P.-t. Cons. .. 45
Manchester R.H.B. Reg. 53
Manchester United Hosps. Sr. H.O. .. 53
Manchester. West Manchester H.M.C. Pre-reg. H.O.'s 53
Newcastle R.H.B. Regs. 54
North Gloucestershire Clinical Area. Reg. 54
Nottingham Child's. Sr. H.O. .. 54
Nottingham City. Sr. H.O. & H.O. .. 54
Portsmouth Group H.M.C. Pre-reg. H.O.'s 54
Reading. Battle. H.O. 54
Reading. Royal Berks. Pre-reg. H.O. 54
Rhyl. Royal Alexandra. Sr. H.O. .. 55
Richmond, Surrey. Royal. Locum Reg. 54
Rochford, Essex. Gen. Sr. H.O. .. 55
Romford. Oldchurch. H.O.'s 55
Romford. Rush Green. Sr. H.O. & H.O. 55
Scotland. Eastern R.H.B. Sr. Reg. .. 55
Scotland. Northern R.H.B. P.-t. Cons. 46
Scotland. Western R.H.B. Regs. .. 55
Sheffield R.H.B. P.-t. Cons. 46
Southampton. Royal South Hants. H.O. 55
Southend-on-Sea. Gen. Locum Reg. 55
St. Helens. H.O. 56
Stockport Infy. H.O. 56
Stockport. Stepping Hill. Sr. H.O. .. 56
Stoke-on-Trent. Haywood. Jr. H.M.O. 56
Stoke-on-Trent. North Staffs Royal Infy. Pre-reg. H.O. 56
Torquay. Torbay. H.O. 56
Wakefield. Gen. Sr. H.O. 56
Wolverhampton Group. H.O. .. 57
Workington Infy. Pre-reg. H.O. or Sr. H.O. 57
Worthing. Locum Sr. H.O. 57

THORACIC SURGERY
North Middlesex, N.18. Locum Reg. & Sr. H.O. 47
South East Regional Thoracic Surgery Unit, S.E.18. Sr. H.O. 48
Aberdeen Gen. Hosps. B.O.M. H.O. .. 48
Liverpool. Fazakerley Group H.M.C. Sr. H.O. 52
Oxford R.H.B. Reg. 54
Oxford United Hosps. H.O. 54

UROLOGY
Hastings. Buchanan. Sr. H.O. .. 52

VENEREOLOGY
London, E.1. Sr. H.O. 47

GENERAL
Canada. Grace Hosp., Winnipeg. Residencies & Sr. Internships .. 57

PUBLIC APPOINTMENTS 57

TOO LATE FOR CLASSIFICATION 58

GENERAL PRACTICE 58

MISCELLANEOUS 58

The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

UNIVERSITY OF ST. ANDREWS
QUEEN'S COLLEGE, DUNDEE
DEPARTMENT OF PHYSIOLOGY AND BIOCHEMISTRY

ASSISTANTSHIP IN BIOCHEMISTRY

The University Court of the University of St. Andrews invites applications for an Assistantship in Biochemistry in the Department of Physiology and Biochemistry, Queen's College, Dundee. The salary (medically qualified) £600–£100 p.a.–£900 ; (if not medically qualified)—under 26 years of age, £550–£25 p.a.–£600—over 26 years of age, £600–£25 p.a.–£650 ; F.S.S.U. and family allowance benefits. The appointment will date from 1st October, 1956, and will be for 3 years, renewable under special circumstances, for 1 additional and final year.

Applications (6 copies), containing names of 3 referees, to be lodged with the undersigned not later than 16th August, 1956.

PATRICK CUMMING, Joint Clerk to the University Court.

UNIVERSITY OF ST. ANDREWS
QUEEN'S COLLEGE, DUNDEE

LECTURESHIP IN CHILD HEALTH

The University Court of the University of St. Andrews invites applications for appointment as Lecturer in Child Health, in the Medical School, Queen's College, Dundee, University of St. Andrews, commencing 1st November, 1956. The salary attached to the appointment is £1300, rising by annual increments of £100 to £1600 p.a., together with F.S.S.U. and family allowance benefits ; a grant towards expenses of removal may be made. The person appointed will receive an Honorary Appointment from the Eastern Regional Hospital Board.

Applications (6 copies), containing the names of 3 referees, should be lodged with the undernoted not later than 31st August, 1956.

PATRICK CUMMING, Joint Clerk to the University Court.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

GENERAL SURGERY

3 months courses of post-graduate surgery suitable for surgeons requiring a refresher course in the current outlook on general surgery or for graduates preparing to specialise in surgery, start on 1ST OCTOBER, 1956, and 18TH MARCH, 1957. The programme has been arranged so as to provide coördinated clinical and systematic instruction in general surgical wards and specialised surgical units in Edinburgh. Fee £31 10s.

MEDICAL SCIENCES

A 3 months course in Applied Anatomy, Physiology, Pathology, Bacteriology and Biochemistry will begin on 24TH JUNE, 1957. This course includes an adequate amount of practical instruction and is suitable for post-graduates wishing to take the Primary Fellowship examination. Fee £31 10s.

2 courses in the Basic Sciences (Anatomy, Physiology, Pathology, including Bacteriology) are arranged by the Royal College of Surgeons, under the ægis of the Edinburgh Post-Graduate Board for Medicine. These courses comprising lectures, demonstrations and practical instruction, will begin on 15TH OCTOBER, 1956, and 11TH FEBRUARY, 1957, and continue for 10 weeks. Fee £26 5s.

The courses in Medical Sciences are designed as a final preparation for the Primary Fellowship examination, and it is essential that those attending should already have a considerable knowledge of the subjects.

INTERNAL MEDICINE

Courses lasting 12 weeks, suitable for graduates desiring a refresher course, or to specialise in medicine, begin on 24TH SEPTEMBER, 1956, and 25TH MARCH, 1957. These courses consist of 320 hours instruction, comprising lectures, clinical demonstrations and ward visits. Fee £31 10s.

The Royal College of Physicians of Edinburgh award 2 Hill Pattison-Struthers Bursaries each year to graduates attending the Internal Medicine course. Each Bursary amounts to £100. Applications must be submitted to the Secretary, Royal College of Physicians, Edinburgh, at least 2 months prior to the starting date of the course for which they are enrolled.

Additional instruction in Clinical Pædiatrics and in Tropical Medicine is arranged in conjunction with the course in Medicine. There is a small additional fee and the numbers are limited.

Applications for enrolment should be addressed to the Director of Post-Graduate Studies, Surgeons' Hall, Edinburgh, 8, supplying particulars of qualifications and post-graduate experience.

THE ROYAL SOCIETY

STOTHERT RESEARCH FELLOWSHIP

Applications are invited by the Council of the Royal Society for a Stothert Research Fellowship in the field of Medicine, including the sciences on which medical knowledge is based. The Fellowship will be tenable in any hospital, medical school or other appropriate research institution or university department in the British Isles or at any other place approved by the Council of the Royal Society. Candidates, who must be of British nationality, should supply the usual personal details and give the names of 2 referees. Testimonials will not be considered. Applicants and referees at a distance may write direct to the address given below, without first obtaining forms. The subject of the proposed research, and the place at which it would be carried out, together with the name of the Head of the Department, should be given.

The appointment will be for 2 years in the first instance, from 1ST JANUARY, 1957, and may be renewed annually up to a total of 4 years. The stipend will be £800 p.a., with increments of £50 p.a., and superannuation benefits to which the successful candidate will be required to contribute 5 % of annual stipend and to which the Society will make a contribution of 10 %.

Applications should be made on forms to be obtained from the Assistant Secretary, The Royal Society, Burlington House, London, W.1, and should be received as early as possible and not later than 1st October, 1956.

THE ROYAL SOCIETY

ALAN JOHNSTON, LAWRENCE AND MOSELEY RESEARCH FELLOWSHIP

Applications are invited by the Council of the Royal Society for the Alan Johnston, Lawrence and Moseley Fellowship for research into the problems of human and animal health and diseases and the biological field related thereto. The Fellowship will be tenable at any place approved by the Council of the Royal Society. Candidates should supply the usual personal details and give the names of 2 referees. Testimonials will not be considered. Applicants and referees at a distance may write direct to the address given below, without first obtaining forms. The subject of the proposed research and the place at which it would be carried out, together with the name of the Head of the Department, should be given.

The appointment will be for 2 years in the first instance, from 1ST JANUARY, 1957 (or such later date as Council may agree), and will be renewable annually up to a maximum of 5 years. It will be subject to the conditions governing Royal Society Research Appointments. The stipend will be £1250 p.a., with annual increments of £50 p.a., with superannuation benefits to which the successful candidate will be required to contribute 5 % of annual stipend and to which the Society will make a contribution of 10 %.

Applications should be made on forms to be obtained from the Assistant Secretary, The Royal Society, Burlington House, London, W.1, and should be received as early as possible, in any case not later than 1st October, 1956.

UNIVERSITY OF GLASGOW

LECTURESHIP IN PATHOLOGY AT THE WESTERN INFIRMARY

Applications are invited for a Lectureship in Pathology. Salary according to placement on University scale for clinical teachers. The final maximum is £1750 p.a. F.S.S.U. and family allowance benefits.

Applications (12 copies) should be lodged, not later than 18th August, 1956, with the undersigned, from whom further particulars may be obtained.

ROBT. T. HUTCHESON, Secretary of the University Court.

MENTAL HEALTH RESEARCH FUND FELLOWSHIP

Applications are invited for Mental Health Research Fund Fellowships from suitably qualified persons wishing to pursue full-time research work bearing on mental health problems whether in clinical psychiatry or in 1 of its supporting sciences. Both senior and junior fellowships are offered in the salary ranges of £700–£1200 and £1300–£2000 (inclusive of superannuation). The appointments will be for up to 3 years in the first instance.

Further information from the Secretary, Mental Health Research Fund, 43, Queen Anne-street, W.1.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL, London, S.E.1. Applications are invited for a post of SENIOR LECTURER IN CLINICAL PATHOLOGY. The post corresponds to a Consultant post in the National Health Service and carries the appropriate salary.

Further information may be obtained from the Dean of the Medical School to whom applications, with the names of 2 referees, should be addressed and should be received by 20th August, 1956.

UNIVERSITY OF EDINBURGH. Lectureship in Medical Statistics. Applications are invited for the post of LECTURER IN MEDICAL STATISTICS in the Department of Public Health and Social Medicine. Salary scale £700–£75–£1000 ; Bar : £1075–£75–£1450 p.a., with placement according to qualifications and experience, and with superannuation benefit and family allowance where applicable.

Further particulars may be obtained from the undersigned, with whom applications, giving the names of 2 referees, should be lodged as soon as possible.

CHARLES H. STEWART, Secretary to the University.

UNIVERSITY OF EDINBURGH. Department of Public HEALTH AND SOCIAL MEDICINE. Applications are invited from medically qualified Men and Women for the post of LECTURER in the Department of Public Health and Social Medicine. Salary scale £700–£75–£1000 ; Bar : £1075–£75–£1450 p.a., with placement according to qualifications and experience, and with superannuation benefit and family allowance where applicable.

Further particulars may be obtained from the undersigned, with whom applications, giving the names of 2 referees, should be lodged as soon as possible.

CHARLES H. STEWART, Secretary to the University.

THE UNIVERSITY OF MANCHESTER. Applications are invited from candidates with medical qualifications registrable in this country for the post of LECTURER IN ANATOMY. Good research facilities are available. Salary (£ sterling) on the scale £1000–£1800 p.a. with membership of F.S.S.U. and children's allowance scheme ; initial salary according to qualifications and experience. The successful candidate will be expected to take up his duties as soon as possible.

Applications should be sent, not later than 7th August, 1956, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained. Overseas applicants should send letters of application giving details of qualifications and experience, and should submit the names of at least 3 persons to whom reference may be made.

THE UNIVERSITY OF MANCHESTER. Applications are invited for the full-time post of LECTURER IN ORTHOPÆDIC SURGERY. Salary on a scale rising to £2000 p.a. according to qualifications and experience. Duties to commence as soon as possible. The successful applicant will be required to work in the Department of Orthopædic Surgery in the Manchester Royal Infirmary, and the Board of Governors of the United Manchester Hospitals is prepared to negotiate an honorary contract with the person appointed.

Applications should be sent not later than 18th August, 1956, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

THE UNIVERSITY OF MANCHESTER. Applications for the post of LECTURER IN SOCIAL AND PREVENTIVE MEDICINE are invited from registered medical practitioners. The post is a joint appointment between the University and the Lancashire County Council, whereby the person appointed, in addition to carrying out lecturing duties at the University, will carry out duties normally associated with an Assistant Divisional Medical Officer in the neighbouring area in the County. Salary on a scale rising to £2000 p.a. with membership of F.S.S.U. and children's allowance scheme. Initial salary fixed according to qualifications and experience.

Applications should be sent not later than 14th September, 1956, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

THE UNIVERSITY OF SHEFFIELD. Applications are invited for a Part-time RESEARCH ASSISTANT IN CHILD HEALTH to assist in an investigation in the prevention of tuberculosis in children, to begin duties on 1st October, 1956. The appointment will be for 1 year in the first instance and the duties of the post will occupy 4 half-days a week. Salary 12 guineas a week.

Further particulars should be obtained from the Registrar, with whom applications (3 copies) should be lodged by 1st August, 1956.

UNIVERSITY COLLEGE, Cork. Applications are invited for the post of PATHOLOGIST in the College's diagnostic laboratory. The period of the appointment will be not less than 1 year. Remuneration will be at the rate of £1200 p.a.

For further particulars apply to—

10th July, 1956. JAMES HURLEY, Secretary and Bursar.

UNIVERSITY COLLEGE, Ibadan, Nigeria. Faculty of MEDICINE. Applications are invited for the following posts :—

E.N.T.—SENIOR LECTURER.

Ophthalmology—SENIOR LECTURER.

Appointments initially 3 years from 1st January, 1957. Present salary scale £1750–£100–£2250 p.a. Allowance, up to 3 children under 11 years, £50 p.a. per child resident in Nigeria or £100 p.a. per child resident elsewhere. Part furnished accommodation at rent up to 7·7% salary. Passages for appointee, wife and up to 3 children under 11 years on appointment, overseas leave and termination. F.S.S.U. Outfit allowance £60.

Applications (6 copies), detailing qualifications and experience and naming 3 referees, by 20th August, 1956, to Secretary, Senate Committee on Colleges Overseas in Special Relation, University of London, Senate House, London, W.C.1, from whom further particulars may be obtained.

ANATOMY DEPARTMENT, DALHOUSIE UNIVERSITY, HALIFAX, NOVA SCOTIA, CANADA. Applications are invited for an ASSISTANT PROFESSOR in the Department of Anatomy. Experience in teaching and research in embryology and histology, or in neuro-anatomy, is essential and a working knowledge of gross anatomy desirable. Candidates with a medical degree will be preferred, although those with an Honors Degree in Medical Science or Biology will receive special consideration. The minimum salary for a medical graduate will be $5000. The salary will depend on qualifications and experience.

Applications to be made to Prof. R. L. DEC. H. SAUNDERS at the above address.

Hospital Services : Senior Appointments

HOSPITALS FOR DISEASES OF THE CHEST. Applications are invited for the post of ANÆSTHETIST (Consultant), Diploma in Anæsthetics essential. The duties in the first instance, will be confined to 1 notional half-day on Saturday mornings in the Throat and Ear Department. Further information may be obtained on request.

Applications (12 copies), stating date of birth, qualifications and experience, with names of 3 referees, to reach the undersigned not later than 1st September, 1956.

KENNETH A. F. MILES, Secretary to the Board.

Brompton Hospital, S.W.3.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, London, N.W.8. Applications are invited for the post of HONORARY ASSISTANT RADIOLOGIST (diagnostic), for a minimum of 4–5 sessions weekly. Candidates must have a Diploma in Radiology.

Applications (30 copies) should be sent to the undersigned on or before 30th August, 1956. Testimonials are not required, but the names of 3 persons willing to act as referees should be furnished. Sister MARY CLARE, Secretary.

MIDDLESEX HOSPITAL, W.1. A vacancy is declared for a CONSULTANT NEUROSURGEON involving 5–6 sessions weekly. Candidates must be Masters of Surgery or Fellows of the Royal College of Surgeons of England, and must have had wide experience in neurosurgery.

Applications, naming 3 referees, should be sent to the Deputy Superintendent by 18th August.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. (Designated as a teaching hospital.) The Board of Governors invites applications for a post of ANÆSTHETIST (Consultant status) for attendance on 1 session weekly, viz., Fridays 2 P.M. Applicants should have had considerable experience in anæsthesia particularly in this specialty.

Applications (10 copies), should give details of age, qualifications, experience, and posts held, together with the names of 2 referees, and should be sent to the House Governor by 7th September. Canvassing disqualifies.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. Locum ANÆSTHETIST (Senior Hospital Medical Officer grade), full-time, required immediately.

Applications, giving full particulars and names of 2 referees, to Group Secretary at above address (42713).

BIRMINGHAM REGIONAL HOSPITAL BOARD. WOLVERHAMPTON GROUP OF HOSPITALS. Part-time CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST (8 notional half-days weekly). Duties at Women's (5 notional half-days) and New Cross (1½ notional half-day) Hospitals, Wolverhampton, and other Group Hospitals (1½ notional half-day). Experience specialty/higher qualification essential.

Applications (15 copies), naming 3 referees, to Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 6th August, 1956.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) Whole-time CONSULTANT GERONTOLOGIST, Selly Oak Hospital, Birmingham (556 chronic sick beds). Experience specialty essential.

(2) Whole-time CONSULTANT PATHOLOGIST, duties at Corbett Hospital, Stourbridge (106 Beds), and other hospitals in the Group. Higher qualification and experience all branches of pathology required. Must reside close proximity hospital.

(3) Whole-time ASSISTANT PSYCHIATRIST, St. Edward's Hospital, Cheddleton (£1575–£2025 p.a.), experience specialty required. Resident, house available.

(4) Whole-time CONSULTANT PSYCHIATRIST/DEPUTY MEDICAL SUPERINTENDENT, St. Margaret's Hospital, Birmingham (1491 Beds), and associated clinics. Wide experience specialty/D.P.M. required. All modern methods rehabilitation mental defectives practised. Resident—married quarters.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 6th August, 1956.

CHELMSFORD, ESSEX. BROOMFIELD HOSPITAL. Required, experienced Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER for long period, full residence or only when on duty. Unit has 330 Beds for the treatment of pulmonary tuberculosis in adults. Tuberculous and non-tuberculous thoracic surgery, chest clinics and mass radiography.

Apply Physician-Superintendent.

EXETER CLINICAL AREA. South-Western Regional HOSPITAL BOARD. Applications are invited for the appointment of ASSISTANT PSYCHIATRIST at Digby-Wonford Hospital, Exeter (577 Beds). The appointment will be on a whole-time basis in the Senior Hospital Medical Officer grade. The successful candidate will work under the general direction of the Medical Superintendent of Digby-Wonford Hospital. The post is a new one and the candidate appointed will be required to be resident at Wonford in order to afford Hospital cover. The residential accommodation is under review and candidates should write to the Medical Superintendent for information stating their requirements.

Applications (12 copies), stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 18th August, 1956.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Part-time (8 half-days weekly) CONSULTANT PSYCHIATRIST to the Burnley Hospital Centre, also on the staff of Whittingham (Mental) Hospital, near Preston, for approximately 3 sessions weekly. Outpatient clinics at Victoria and General (121 psychiatric beds) Hospitals, Burnley. Wide experience and higher qualifications essential, appointee to live in or near Burnley, 17th August, 1956.

(*b*) Part-time (8 half-days weekly) CONSULTANT PÆDIATRICIAN, Barrow and Furness Hospital Centre, with outpatient clinics at North Lonsdale Hospital, Barrow, and Ulverston Hospital and about 20 Beds at the Devonshire Road Hospital, Barrow. Wide experience and higher qualifications essential, appointee to live in or near Barrow. 17th August, 1956.

(*c*) Part-time (8 half-days) CONSULTANT SURGEON to the Burnley Hospital Centre, mainly at the Victoria and General Hospitals, Burnley, but with duties at Reedyford Hospital, Nelson, and Hartley Hospital, Colne. Wide experience and higher qualifications essential, appointee to live in or near Burnley. 10th August, 1956.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by the dates stated.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. ROYAL VICTORIA INFIRMARY. Applications are invited for the appointment of a Whole-time or maximum Part-time ANÆSTHETIST (Consultant) to the Department of Anæsthetics at the Royal Victoria Infirmary which is associated with the Medical School of the University of Durham. The successful candidate will be required to live within 10 miles of the Hospital.

Applications, giving full details, together with the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE REGIONAL HOSPITAL BOARD. NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE AREA. (Population 388,000.) CONSULTANT PATHOLOGIST, whole-time, or part-time for a minimum of 9 notional half-days per week. A large new Institute of Pathology at Newcastle General Hospital (783 Beds) is now almost completed and includes a new hospital laboratory, an M.R.C. laboratory and the Regional Blood Transfusion Centre. The pathology staff also cover the needs of a nearby mental hospital of 1188 Beds. The appointee will be required to live within the area of the Newcastle Hospital Management Committee Group. Further details of the appointment from the Senior Pathologist, General Hospital, Newcastle. It is hoped that the person appointed will have special interest in hæmatology.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

OXFORD REGIONAL HOSPITAL BOARD. Consultant RADIOLOGIST (whole-time or maximum part-time) to the hospitals of the Reading Area. The Consultant will share in the Radiological Service centred on the Royal Berkshire Hospital (339 Beds) with peripheral departments at 6 other hospitals. Applicants must hold the D.M.R. or equivalent and a higher qualification in medicine or surgery is desirable.

Applications (10 copies), stating age, qualifications, experience and the names of 3 referees, should reach the Secretary, 43, Banbury-road, Oxford, by 1st September, 1956.

OXFORD REGIONAL HOSPITAL BOARD. Consultant PSYCHIATRIST (part-time, 8 sessions) for the Child Guidance Service in the Buckinghamshire Area. Duties mainly at Aylesbury and High Wycombe. 2 of the sessions will be concerned with adult psychiatry in conjunction with St. John's Hospital, Stone (805 Beds). The Buckinghamshire County Council may be prepared to offer the successful candidate an additional contract for approximately 2 sessions a week as a Preventive Psychiatrist in their Child Welfare Service on a similar salary scale.

Applications (12 copies), stating age, qualifications, experience, and the names of 3 referees, should reach the Secretary, 43, Banbury-road, Oxford, by 31st August, 1956.

OXFORD. UNITED OXFORD HOSPITALS. Applications are invited, from medical practitioners suitably qualified in this specialty, for the post of Whole-time ASSISTANT PHYSICIAN to the Department of Physical Medicine. The appointment will be of Consultant status and on a basis of divided sessions between the United Oxford Hospitals and the Oxford Regional Hospital Board, with the greater number allocated to the United Oxford Hospitals (the precise arrangements are at present being negotiated). Regional commitments include work in peripheral clinics. The appointment will be in accordance with terms and conditions of service of hospital medical and dental staffs.

Applications (10 copies), with full particulars of qualifications and experience and the names of 2 referees, should be sent to the Administrator, Radcliffe Infirmary, Oxford, to arrive not later than 4th August, 1956.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of Part-time CONSULTANT in General Surgery (8 notional half-days) at the Lewis Hospital, Stornoway. A suitable house is available.

Schedules of application and further particulars may be obtained from the undersigned, with whom applications should be lodged by 20th August, 1956.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens ANÆSTHETIST (Senior Hospital Medical Officer or Senior Registrar grade according to experience) required for 3 months from 1st August 1956. Main duties are at the Royal Northern Infirmary and Raigmore Hospital, Inverness.

Applications, on forms obtainable from the undersigned, should be submitted as soon as possible.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT RADIOTHERAPIST based at the Western Infirmary, Glasgow, with duties at other hospitals as may be required by the Regional Radiotherapy Service. Salary (at age 32 and over) on the scale £1575–£50–£2025. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, not later than 30 days after the publication of this advertisement.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Part-time ASSISTANT PSYCHIATRIST to undertake 4 notional half-days a week for child guidance work at the Chislehurst Child Guidance Clinic, The Willows, Red Hill, Chislehurst, Kent, which is administered by the Kent County Council. Previous experience of child guidance is essential and possession of a higher qualification is desirable. Salary within the scale £1575–£50–£2025. Applicants may visit the Clinic.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, by 4th August, 1956.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a Locum Tenens PHYSICIAN in Physical Medicine (Consultant or Senior Hospital Medical Officer grade) for the Portsmouth Group of hospitals from 15th to 31st August, 1956, inclusive. The appointment will be in accordance with the terms and conditions of service of hospital medical staff.

Applications, stating qualifications, experience and the names and addresses of 3 referees, to the Area Secretary, Highcroft, Romsey-road, Winchester, Hants, by 9th August, 1956.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR ASSISTANT PSYCHIATRIST for Rauceby Hospital, Sleaford. House available on Hospital estate. Salary scale £1575–£50–£2025.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 18th August, 1956.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT RADIOLOGIST for Derbyshire Royal Infirmary to work under the direction of the Consultant Radiologist-in-charge. Candidates should possess a Diploma in Radiology. Salary scale £1575–£50–£2025.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 11th August, 1956.

SHEFFIELD REGIONAL HOSPITAL BOARD. Part-time CONSULTANT GENERAL SURGEON for 8 notional half-days per week, required for the Wharncliffe and City General Hospitals, Sheffield.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 11th August.

WEST CORNWALL CLINICAL AREA. South-Western REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Locum Tenentes SENIOR HOSPITAL MEDICAL OFFICERS in Anæsthetics to undertake the following whole-time duties at Truro :—

(1) For approximately 4-5 months from 17th August, 1956.
(2) From 16th August to 13th September, 1956.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, immediately.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for the post of ASSISTANT ADMINISTRATIVE MEDICAL OFFICER. Applicants must be at least 35 years of age and must have had at least 10 years experience since registration, including experience in the administration of hospital services. The salary for the post will be at the rate of £1802 p.a. rising by 4 annual increments of £80 and 1 increment of £51 to a maximum of £2173 p.a.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44/46, Queen-street, Belfast, and to be returned not later than 4th August, 1956.

Hospital Services : Junior Appointments

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. HOUSE SURGEON/CASUALTY OFFICER (combined post), resident, vacant immediately. House Officer grade, not pre-registration and not recognised for F.R.C.S.

Apply, enclosing copies of 2 recent testimonials, to Hospital Secretary with whom arrangements can be made to view the Hospital.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (Acute—307 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (casualty).

Applications, with copies of 2 testimonials, immediately to the Hospital Secretary.

BROMPTON HOSPITAL, S.W.3. Applications are invited for the following posts :—

ASSISTANT RESIDENT MEDICAL OFFICER (Senior House Officer grade). Appointment is for 6 months from 1st October, 1956. Experience in artificial pneumothorax essential and in E.N.T. work desirable. Duties (now under revision) at present include work in tuberculosis dispensary and wards.

NON-RESIDENT HOUSE PHYSICIAN for which there are 3 vacancies, for 6 months from 1st October, 1956. Duties include work in Outpatient Department and wards, also 1 months duty at Frimley as occasion demands. Salary at the rate of £525 p.a.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 4th August, to—

KENNETH A. F. MILES, House Governor.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER (post-registration) required in Obstetrics and Gynæcological Department. Post recognised for M.R.C.O.G. Appointment from 1st September.

Applications, with copies 2 testimonials, to Medical Director by 28th July.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT SENIOR HOUSE OFFICER required for Casualty Department. Successful candidate will work under supervision of Orthopædic Traumatic Specialist. Appointment for 6 months from 12th September, 1956.

Applications, with names of 2 referees or copies of 2 testimonials, to Medical Director by 28th July, 1956.

COLINDALE HOSPITAL, Colindale-avenue, London, N.W.9. (300 Beds.) SENIOR HOUSE OFFICER (resident when on duty) required at above Hospital to assist in thoracic, orthopædic and genito-urinary surgery.

Apply, stating age, qualifications and experience and giving the names and addresses of 2 referees, to Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, by 4th August, 1956.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) Applications are invited for the post of SECOND CASUALTY OFFICER with duties in the Department of Orthopædic and Traumatic Surgery (Senior House Officer grade). Recognised for F.R.C.S. Salary £745 p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) HOUSE PHYSICIAN required for a period of 6 months. Post vacant 31st August, 1956.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

FOREST GATE HOSPITAL, Forest-lane, London, E.7. Pre-registration OBSTETRIC HOUSE OFFICER (second post) required for 6 months commencing 1st September, 1956. The appointment is recognised for training candidates for D.Obst.R.C.O.G.

Applications, with names of 2 referees, to the Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 28th July, 1956.

FULHAM MATERNITY HOSPITAL, 5/7, Parsons Green, S.W.6. SENIOR HOUSE OFFICER (resident) required, 19th August, 1956. Candidates may visit the Hospital by arrangement.

Applications to be submitted on forms obtainable from Hospital Secretary (L.97), Fulham Hospital, St. Dunstan's-road, Hammersmith, W.6, immediately.

GERMAN HOSPITAL, Dalston, E.8. (General—157 Beds.) Applications for the 6 months resident appointment of registered HOUSE SURGEON (obstetrics and gynæcology), vacant 8th August, should be sent to Group Secretary, Hackney Hospital, London, E.9, quoting GH/HSO.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications are invited for appointment as SENIOR HOUSE OFFICER ANÆSTHETIST. The post, vacant on 22nd August, is recognised for the D.A. and the F.F.A.R.C.S. examinations, and offers wide experience of anæsthesia and opportunities of study for higher qualifications.

Apply Secretary, above address, by 4th August, quoting HH/SHO/A.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications are invited for the following 6 months resident appointments :—

(*a*) Registered OBSTETRIC HOUSE SURGEON (from 17th October).

(*b*) Pre-registration OBSTETRIC HOUSE SURGEON (second post) from 3rd September.

Posts recognised for M.R.C.O.G.

Applications to Secretary, above address, by 8th August, quoting HH/HSO.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, London, N.21. HOUSE SURGEON required. Duties mainly orthopædic with some E.N.T., casualty and emergency general surgery. New Operating Theatre. Outpatient and Casualty Departments. Preference given for applicants seeking pre-registration post under Medical Act, 1950.

Applications, with copies of 3 testimonials and name and address of 1 referee, to Hospital Secretary.

KING EDWARD MEMORIAL HOSPITAL, Ealing ; PERIVALE MATERNITY HOSPITAL, GREENFORD. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time) in Obstetrics and Gynæcology for duty at King Edward Memorial Hospital, Ealing (17 gynæcological beds), Perivale Maternity Hospital, Greenford (50 obstetric beds). Recognised in Obstetrics for M.R.C.O.G. Resident at Perivale Maternity Hospital. Vacant 1st October. Candidates may visit the Hospitals by appointment with Hospital Secretary (EALing 4081).

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 20th August.

LAMBETH HOSPITAL, Brook-drive, S.E.11. South West METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of MEDICAL REGISTRAR, vacant in September, 1956. The appointment will be for 1 year in the first instance. Preference will be given to applicants having a higher qualification in medicine. Canvassing will disqualify, but candidates are not precluded from visiting the Hospital.

Forms of application (enclosing stamped addressed envelope) from the Secretary, to whom completed forms should be returned not later than 4th August, 1956.

LEWISHAM HOSPITAL, London, S.E.13. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics). The appointment is tenable for 1 year and is recognised for the D.A. and F.F.A.R.C.S. Salary £745 p.a., less £150 for residential emoluments.

Applications, stating age, qualifications and experience, with copy testimonials or names of referees, to Secretary, Group Offices, Lewisham Hospital, S.E.13.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. Applications are invited for the appointment of Part-time MEDICAL REGISTRAR (grading : Senior Registrar). The duties require the equivalent of 5 notional half-days a week, including 1 Refill Clinic. The appointment is for 1 year and is renewable. The present holders of Registrar posts at the Hospital are eligible to apply.

Applications, stating date of birth, qualifications with dates, and previous appointments held and accompanied by copies of 3 testimonials, should reach the undersigned by 18th August.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR HOUSE OFFICER to the Department of Venereal Diseases. The post becomes vacant on 1st September.

Applications (6 copies), together with 6 copies of 3 recent testimonials, should reach the undersigned by 8th August, 1956.

H. BRIERLEY, House Governor.

NATIONAL HEART HOSPITAL, Westmoreland-street, London, W.1 (with which is associated the Institute of Cardiology). Applications are invited for the post of RESIDENT MEDICAL OFFICER (Male). The appointment is for a period of 6 months from 1st October, 1956, but may be renewed for a further period of 6 months. The status and salary are either that of a Senior House Officer or Registrar and are in accordance with the national terms and conditions of service.

Applications, with copies of 3 recent testimonials, should be sent to me not later than Saturday, 4th August, 1956.

ROBERT G. E. WHITNEY, Secretary to the Board.

MEMORIAL HOSPITAL, Shooters Hill, Woolwich, S.E.18. PÆDIATRIC HOUSE PHYSICIAN (recognised for D.C.H.), vacant 20th August. Not pre-registration. The post entails routine ward and outpatient work as well as experience with neo-nates and includes general and casualty duties.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

MILE END HOSPITAL, Bancroft-road, London, E.1. (484 Beds.) HOUSE SURGEON (pre- or post-registration). Post vacant 25th August, 1956. Recognised by Royal College of Surgeons.

Application forms obtainable from Physician-Superintendent to be returned by 3rd August, 1956, with copies of not more than 3 testimonials.

NELSON HOSPITAL, Kingston-road, Merton, S.W.20. RESIDENT ANÆSTHETIST (Senior House Officer grade).

Applications, stating age, experience and qualifications, with copies of testimonials and the name of 1 referee, should be sent to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

NORTH LONDON BLOOD TRANSFUSION CENTRE, Deansbrook-road, EDGWARE. JUNIOR HOSPITAL MEDICAL OFFICER for full-time duties with mobile teams at donor sessions. The appointment is for 3 years. Opportunity for training in clinical pathology exists.

Applications, giving age, qualifications, experience, and names of 2 referees, to Director not later than 4th August, 1956.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. 2 RESIDENT HOUSE PHYSICIANS required for 1st September for 6 months. General medicine. Approved as pre-registration posts (first or second).

Applications (in own handwriting), stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 30th July.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. Applications are invited from pre-registration and registered medical practitioners for the post of RESIDENT HOUSE SURGEON (general, orthopædic and traumatic surgery). 6 months appointment ; vacant 1st September ; recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 30th July.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. Locum REGISTRAR for Thoracic Surgical Unit, non-resident, required from 1st August for at least a month. Higher qualification in surgery desirable but not essential. All types of tuberculous and non-tuberculous thoracic surgery.

Applications, with full particulars and copies of testimonials or names of referees, to Secretary of Hospital.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. SENIOR HOUSE SURGEON for Thoracic Unit, resident, required. 6 months appointment with possible extension to 1 year. Recognised for F.R.C.S. Offers experience in all types of tuberculous and non-tuberculous thoracic surgery.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital.

PLAISTOW MATERNITY HOSPITAL, Howards-road, Plaistow, London, E.13. RESIDENT OBSTETRIC OFFICER (House Officer post-registration), required for 6 months commencing 1st October, 1956.

Apply by 28th July, 1956, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, enclosing copies of 2 recent testimonials.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. Applications are invited from registered medical practitioners for the post of OBSTETRIC HOUSE SURGEON, with gynæcology and may be some general surgery. Resident. Senior House Officer grade. Vacancy from 16th August, 1956.

Applications, stating age, qualifications, and with 3 testimonials, to the House Governor, not later than 27th July, 1956.

PUTNEY HOSPITAL, Lower Common, S.W.15. South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR (resident), for 1 year in first instance from early October, 1956. Holder required as part of his duties to act as Group Admissions Officer, alternate periods of 3 months. Deduction of £180 p.a. for board, lodging, &c.

Forms of application, to be returned completed within 14 days of this advertisement, from Secretary, Battersea and Putney Group Hospital Management Committee, 54, Upper Richmond-road, S.W.15.

QUEEN MARY'S HOSPITAL, Roehampton, London, S.W.15. (532 Beds.) ORTHOPÆDIC REGISTRAR required whole-time. 6 months in post count towards F.R.C.S. Final. National Health Service terms and conditions.

Detailed applications (4 copies), giving nationality, date of birth, qualifications, experience, present appointments, and names of 3 referees, should reach the Secretary, Ministry of Health, Division 4(v), Norcross, Blackpool, Lancs, by 11th August, 1956.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. JUNIOR CASUALTY OFFICER (House Officer third post) required for 6 months commencing 16th August, 1956.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 28th July, 1956.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. HOUSE PHYSICIAN (pre-registration) required for 6 months commencing 13th August, 1956.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 28th July, 1956.

ROYAL LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, W.C.1. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Anæsthetics. Experience in anæsthetics essential. Salary and conditions of service in accordance with Ministry of Health scale.

Applications, giving full particulars of age, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary, Royal London Homœopathic Hospital, by 11th August, 1956.

ROYAL NORTHERN HOSPITAL, N.7. North West METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Radiology (X-ray Diagnostic Department) required at above Hospital. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, the Secretary, Royal Northern Hospital, Holloway-road, London, N.7, by 31st July, 1956.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. DARTFORD AND WOOLWICH GROUPS OF HOSPITALS. Applications are invited for 2 appointments as REGISTRAR in Anæsthetics, involving special duties with Positive Pressure Respirators in the Poliomyelitis Units at the Brook Hospital, Shooters Hill-road, S.E.18, and Joyce Green Hospital, Dartford. Rotating duties will be arranged between the 2 units during the normal 2-year tenure. Experience in general anæsthetic duties and with the Neuro- and Thoracic Surgical Units at the Brook Hospital will be available also. The appointments will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 4th August, 1956.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General Medicine to fill a vacancy in the approved trainee establishment at the Woolwich Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 4th August, 1956.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as REGISTRAR in Orthopædic Surgery at the Lewisham Group of hospitals, for duties mainly at Lewisham Hospital, London, S.E.13. The appointment, which may be either resident or non-resident, will be for 1 year in the first instance and is recognised for F.R.C.S. The medical establishment of the Department comprises 2 Registrars and a Senior House Officer under the direction of 2 Consultants; the Casualty Department is separately staffed.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 4th August, 1956.

SOUTH EAST REGIONAL THORACIC SURGERY UNIT (50 Beds), BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER, vacant mid-August. Recognised for F.R.C.S. 6 months appointment and may then be renewed for a further period. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

SOUTH WESTERN HOSPITAL, Landor-road, S.W.9. LAMBETH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited (preferably from women candidates) for the post of HOUSE SURGEON (pre-registration) at the above Hospital. Duties include general surgery, and the successful applicant will also be required to provide relief for leave of the House Surgeon at the Annie McCall Maternity Hospital.

Application forms can be obtained from the Secretary at the Hospital.

ST. CLEMENT'S HOSPITAL, London, E.3. Bow Group HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (not pre-registration) for general medical wards.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to be sent to the Hospital Secretary, St. Clement's Hospital, 2A, Bow-road, London, E.3.

ST. GILES HOSPITAL, Camberwell, S.E.5. Applications invited for appointment as HOUSE OFFICER (casualty duties, with some general surgical, E.N.T. and eye beds). Resident; not pre-registration. Salary £525 p.a.

Apply to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22, as soon as possible.

ST. MARY'S HOSPITAL, Paddington, W.2. Applications are invited for the post of REGISTRAR to the Diagnostic Radiological Department: possession of the Diploma in Radiology is essential. The appointment is for a first period of 12 months, with effect from 1st September, 1956; remuneration to be at Registrar rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 7th August, 1956.

ST. MARY'S HOSPITAL, Paddington, W.2. Applications are invited from suitably qualified practitioners for the post of NON-RESIDENT CASUALTY SURGEON. Candidates must have held an appointment as House Surgeon at this Hospital or at another hospital approved by the Board of Governors. The appointment is for a first period of 6 months, with effect from 1st September, 1956; remuneration to be at Senior House Officer rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 31st July, 1956.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Whole-time SENIOR REGISTRAR to the Diagnostic Radiological Department of St. Mary's Hospital. The appointment is for a first period of 12 months with effect from 1st October, 1956; remuneration to be at Senior Registrar rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 31st July, 1956.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Upper-road, Plaistow, London, E.13. RESIDENT SENIOR HOUSE OFFICER (general medicine), required for a period of 12 months commencing 15th September, 1956.

Apply by 28th July, 1956, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, naming 3 referees.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for posts as RESIDENT ASSISTANT CLINICAL PATHOLOGIST, in the grade of Senior House Officer. Previous experience in laboratory work is not essential, but applicants should have held a clinical appointment. The successful candidates will be required to be resident alternately at St. George's Hospital, Hyde Park Corner, and at the Grove Hospital, Tooting, a branch of St. George's Hospital, and will be required to take up duty as soon as possible.

Applications, stating age, education, qualifications, experience and the names of 2 referees, should reach the undersigned not later than 11th August, 1956.

P. H. CONSTABLE, House Governor.

ST. NICHOLAS HOSPITAL, Plumstead, S.E.18. House OFFICER (Casualty, Fracture and Orthopædic Departments), vacant 5th August. Recognised for F.R.C.S. 6 months resident appointment (not pre-registration). There is also a Senior House Officer in Casualty Department.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

WANSTEAD HOSPITAL, Hermon Hill, London, E.11. (191 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST, graded Senior House Officer. Salary £745 p.a., less £150 p.a. for board, lodging, &c. Recognised for the F.F.A.R.C.S. and D.A.

Applications, stating age, qualifications and experience together with copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of SENIOR HOUSE OFFICER to E.N.T. Department for 1 year from 10th October, 1956.

Applications (5 copies), with names of 2 referees, to House Governor by 4th August.

WEST LONDON HOSPITAL, Hammersmith-road, W.6. RESIDENT HOUSE SURGEON (general and genito-urinary) required 1st September. Pre-registration candidates considered.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary by 28th July.

WOOLWICH GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICERS (anæsthetics). 1 at St. Nicholas Hospital, Plumstead, vacant now, and 1 at Memorial Hospital, Woolwich, vacant 18th August. Both posts recognised for F.F.A.R.C.S. and are for 6 months in the first instance and may be renewed. Possession of D.A. an advantage.

Apply to Group Secretary, Memorial Hospital, Shooters Hill, Woolwich, S.E.18.

AYRSHIRE CENTRAL HOSPITAL. (Maternity Section— 126 Beds.) HOUSE OFFICER (obstetrics) required now until 31st December. Pre-registration appointment. Recognised M.R.C.O.G.

Apply immediately, Area Medical Superintendent, 1, Hill-street, Kilmarnock.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the appointment of a HOUSE SURGEON in the thoracic surgery wards of Woodend General Hospital, Aberdeen, for a period of 6 months from 1st August, 1956, to 31st January, 1957. The post is a resident one and is approved as a pre-registration post for provisionally registered practitioners.

Applications, with full details and giving the names of 2 referees, should be lodged immediately with the Secretary, Aberdeen General Hospitals, P.O. Box 92, 62, Queen's-road, Aberdeen.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the appointment of a REGISTRAR in Ophthalmology for the Aberdeen Royal Infirmary. The post is a whole-time one and is non-resident. Salary and conditions of service are in accordance with the terms issued by the Department of Health for Scotland.

Applications, giving details of qualifications and experience, with the names of 2 referees, should be lodged with the Secretary, Aberdeen General Hospitals, P.O. Box No. 92, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the appointment of a HOUSE SURGEON in the E.N.T. Department of the Aberdeen Royal Infirmary for a period of 6 months from 1st August, 1956, to 31st January, 1957. The post is a resident one. The appointment is approved as a pre-registration post and tenure for the prescribed period will count towards full registration on the Medical Register for provisionally registered practitioners.

Applications, with full details, and giving the names of 2 referees, should be lodged immediately with the Secretary, Aberdeen General Hospitals, P.O. Box No. 92, 62, Queen's-road, Aberdeen.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the appointment of a HOUSE PHYSICIAN in the Tubercle Wards of Woodend General Hospital, Aberdeen, for a period of 6 months from 1st August, 1956, to 31st January, 1957. The post is a resident one. The appointment is approved as a pre-registration post and tenure for the prescribed period will count towards full registration on the Medical Register for provisionally registered practitioners.

Applications, with full details, and giving the names of 2 referees, should be lodged immediately with the Secretary, Aberdeen General Hospitals, P.O. Box No. 92, 62, Queen's-road, Aberdeen.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the appointment of a HOUSE PHYSICIAN in the Skin and Dental Ward of the Aberdeen Royal Infirmary for a period of 6 months from 1st August, 1956, to 31st January, 1957. The post is a resident one. The appointment is approved as a pre-registration post and tenure for the prescribed period will count towards full registration on the Medical Register for provisionally registered practitioners.

Applications, with full details, and giving the names of 2 referees, should be lodged immediately with the Secretary, Aberdeen General Hospitals, P.O. Box No. 92, 62, Queen's-road, Aberdeen.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the appointment of a HOUSE SURGEON in the ophthalmic ward of the Aberdeen Royal Infirmary for a period of 6 months from 1st August, 1956, to 31st January, 1957. The post is a resident one. The appointment is approved as a pre-registration post and tenure for the prescribed period will count towards full registration on the Medical Register for provisionally registered practitioners.

Applications, with full details, and giving the names of 2 referees, should be lodged immediately with the Secretary, Aberdeen General Hospitals, P.O. Box No. 92, 62, Queen's-road, Aberdeen.

ABERDEEN SPECIAL HOSPITALS BOARD OF MANAGEMENT. 1 HOUSE OFFICER (pre- or post-registration) required immediately. The post offers experience mainly in eye and skin conditions and is classified for pre-registration purposes as quasi-medical. It is tenable for 6 months from 1st August, 1956.

Applications, with full details, to Group Medical Superintendent, Royal Aberdeen Hospital for Sick Children, Westburn-drive, Aberdeen.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON (Male) for general surgical duties. 6 months appointment, vacant 5th September, 1956. Preference given to pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. SENIOR HOUSE OFFICER (obstetrics/gynæcology) required at Ashton-under-Lyne General Hospital. There are 82 obstetric and 26 gynæcological beds. Recognised for M.R.C.O.G. Vacant 4th August, 1956.

Applications, with copies of 2 testimonials, should be forwarded to the Group Secretary, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancs.

BARKING HOSPITAL (Maternity), Upney-lane, Barking. There will be a vacancy for a RESIDENT SENIOR HOUSE OFFICER at the above Hospital on 3rd August, 1956. Salary will be at the rate of £745 p.a., less emoluments. Applicants should have been qualified not less than 1 year. Duties will include antenatal work.

Applications, accompanied by copies of testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

BARRY ACCIDENT AND SURGICAL HOSPITAL. CARDIFF HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required immediately at above Hospital. Staffed by whole-time Consultant Surgeon and Senior Casualty Officer. Excellent experience given in general surgery.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

BECKENHAM HOSPITAL, Kent. Casualty Officer (Senior House Officer) required for 1 year in first instance, with duties in Orthopædic and Fracture Departments. Recognised for F.R.C.S.

Apply, stating age, nationality, qualifications and experience, and naming 3 referees, to Administrative Officer.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. ASSISTANT PATHOLOGIST (Senior House Officer grade) required in Area Laboratory with attendance at Branch Laboratory, Driffield. Offers experience all branches of pathology. Salary £745.

Detailed applications to Group Secretary

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) ORTHOPÆDIC HOUSE SURGEON (first, second, or third post). Married accommodation available. Offers good opportunity for general experience in busy acute general hospital. Approved pre-registration post. Fully qualified practitioners may apply. Recognised for F.R.C.S. Vacant now.

Apply Group Secretary.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) HOUSE SURGEON (first, second or third post), vacant early September. General surgical duties, some orthopædics. Offering good opportunity for general experience in busy acute General Hospital. Married quarters available. Recognised for F.R.C.S. Approved pre-registration post. Fully qualified practitioners may apply.

Applications to Group Secretary.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) Pre-registration HOUSE OFFICER in Obstetrics and Gynæcology, vacant mid-August. Hospital has Maternity Unit of 22 Beds and Gynæcological Annexe of 18 beds. Fully qualified practitioners may apply.

Detailed applications to Group Secretary.

BEVERLEY, YORKSHIRE. BROADGATE HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER. Progressive Mental Hospital of 600 Beds with outpatient clinics at general hospitals. Facilities for D.P.M. course at Leeds University. Self-contained flat available. Candidates may visit Hospital by appointment with Physician-Superintendent.

Applications to Group Secretary, Westwood Hospital, Beverley, E. Yorks.

BEDFORD GENERAL HOSPITAL, Bedford. (439 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR, vacant 1st October; appointment for 1 year, renewable for second year. Hospital may be visited by writing to Senior Physician.

Application forms obtainable from, and returnable to, Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, BIRMINGHAM, 15. RESIDENT ANÆSTHETIST (Senior House Officer). There are 3 Consultant Anæsthetists and training is given in modern methods of anæsthesia. Ample opportunity for study. Previous experience not essential. Post vacant 17th September.

Applications, with full details, naming 2 referees, to Administrator by 4th August.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, BIRMINGHAM, 15. (215 Beds and 8 House Surgeons.) HOUSE SURGEON (resident), vacant 27th August. Recognised for purpose of casualty by R.C.S.(Eng.). Teaching programme by Consultant staff. Appointment for 6 months, some of which may be spent, at applicant's request, in 42-Bedded Medical Research Council's Burns Unit.

Apply within 7 days of advertisement to Administrator, naming 2 referees.

BIRMINGHAM, 18. ALL SAINTS' HOSPITAL. Senior HOUSE OFFICER (Male or Female), resident, required. The Hospital is associated with the University of Birmingham for teaching of Psychiatry. Training for Diploma in Psychological Medicine provided.

Applications, stating age and qualifications, to the Medical Superintendent.

BIRMINGHAM (near). MARSTON GREEN MATER-NITY HOSPITAL, Berwicks-lane, MARSTON GREEN, near BIRMINGHAM. RESIDENT SENIOR HOUSE OFFICER in Pædiatrics required for 6 months or 1 year from 1st August. (The latter to be recognised for D.C.H.) Duties in Premature Baby Unit (12 Cots), in Neonatal Department at above Hospital (121 Beds), and in Neonatal and Children's Department at neighbouring hospitals. Previous pædiatric or obstetric experience desirable.

Detailed applications to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Coventry Group No. 20, Stoney Stanton-road, Coventry**

REGISTRAR, General Surgery, for Gulson Hospital (312 Beds—79 General Surgery). Recognised F.R.C.S. Experience specialty essential. Resident. Married accommodation available.

(2) **Dudley and Stourbridge Group, Guest Hospital, Dudley**

(*a*) REGISTRAR (general surgery) for Wordsley Hospital (478 Beds). Experience specialty essential. Higher qualification desirable. Resident. Vacant September.

(*b*) REGISTRAR (general surgery) for Guest Hospital (154 Beds). Experience specialty essential. Higher qualification desirable. Resident.

Application forms from Group Secretaries, to be returned before 30th July, 1956.

BIRMINGHAM. RUBERY HILL HOSPITAL. (950 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required, resident or non-resident, Male or Female. Valuable experience provided in the investigation, diagnosis and treatment of all forms of psychiatric illness. D.P.M. Course, Birmingham University. Previous postgraduate psychiatric experience not essential. Ministry of Health terms and conditions of service.

Applications, stating name, age, nationality, qualifications, experience, and providing the names of 3 referees, to be sent as soon as possible to the Group Secretary, Offices of the Hospital Management Committee, Rubery Hill Hospital, Birmingham.

BIRMINGHAM. ST. CHAD'S HOSPITAL, Hagley-road, BIRMINGHAM, 16. SENIOR HOUSE OFFICER in Obstetrics and Gynæcology required. Appointment for 12 months and recognised for M.R.C.O.G. Unit affiliated to Birmingham University for undergraduate clinical tuition.

Detailed applications, with copies of 2 recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. Applications are invited for the post of SURGICAL REGISTRAR (non-resident), vacant 1st September, 1956. Excellent opportunities exist for performance of pædiatric surgery in close association with the Consultant Surgeons of the Teaching Hospital. Preference will be given to candidates holding a higher qualification. Residence in the Hospital will be required when the Resident Surgical Officer is absent.

Forms of application may be obtained from the House Governor, The Children's Hospital, Ladywood-road, Birmingham, 16, and should be returned not later than 25th July.

G. A. PHALP, Secretary to the Board of Governors.

BOLTON DISTRICT GENERAL HOSPITAL. (604 Beds, including 109 for obstetrics and 30 for gynæcology.) RESIDENT HOUSE OFFICER for the Department of Obstetrics and Gynæcology. Tenable for 6 months, recognised under the Pre-registration Service Scheme. Hospital recognised for M.R.C.O.G. and D.Obst.R.C.O.G.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, Bolton and District Hospital Management Committee, The Royal Infirmary, Bolton.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST (Senior House Officer grade). Main duties at Bolton Royal Infirmary and Bolton District General Hospital. Tenable for 12 months and recognised for the D.A. and F.F.A.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BOSTON GENERAL HOSPITAL. (80 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (obstetrics and gynæcology) required with relief duties in the Casualty Department. Post becomes vacant 1st August. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 30th July, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (resident), orthopædic and casualty combined. The post which is now vacant is recognised for the F.R.C.S. examination and is normally tenable for 12 months.

Applications to the Hospital Secretary.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HANTS. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Locum MEDICAL REGISTRAR required for 3 months from 12th August, 1956, at the above Hospital of 259 Beds (including 79 acute medical, 34 pædiatrics, 6 chest diagnostic and 140 chronic sick).

Applications, giving details of age, experience and nationality, should be sent to the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, immediately.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (312 Beds.) CASUALTY HOUSE SURGEON (1 of 3). Duties include work in Orthopædic and Traumatic Unit. Vacant 31st July. Recognised for pre-registration and F.R.C.S.

Applications, stating usual particulars and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (542 staffed beds, expanding.) Applications are invited for SENIOR HOUSE OFFICER posts in the Regional Department of Neurosurgery. Vacancies will arise mid-August and at the end of September next. These posts offer useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis. Recognised for F.R.C.S.

Applications to the Secretary, Frenchay Hospital, quoting "N.S.F." 2 referees required.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards for the joint appointment of REGISTRAR in General Surgery. The appointment will be held for 1 year in the first instance and be renewable for a further year. The successful candidate will be appointed to work for the first year mainly at Torbay Hospital, Torquay, and at Newton Abbot Hospital, but may be required to undertake sessions in other hospitals in the Group.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 15th August, 1956.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards for the joint appointment of SENIOR REGISTRAR in Radiodiagnosis to the North Gloucestershire Clinical Area. The appointment will be held for 1 year in the first instance but may be renewed thereafter on an annual basis. The successful candidate will be appointed to work for the first year mainly at Cheltenham General, Eye and Children's Hospital but will be required to visit other hospitals in the Clinical Area as determined by the Regional Board from time to time.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 15th August, 1956.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards for the joint appointment of REGISTRAR in Orthopædic and Traumatic Surgery. The appointment, which is recognised for the F.R.C.S. (England), will be held for 1 year in the first instance and be renewable for a further year. The successful candidate will be appointed to work for the first year mainly at Mount Gold Orthopædic Hospital and the Traumatic Centre at the General Hospitals, Plymouth.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 15th August, 1956.

BROMSGROVE GENERAL HOSPITAL, Worcestershire. (423 Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON at the above Hospital. Post now vacant.

Applications, with names of 3 referees, to the Hospital Secretary.

BURTON UPON TRENT GENERAL HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER (orthopædic) required for the above Hospital as from 1st September, 1956. Duties include supervision of Casualty House Officer.

Applications to Group Secretary.

BURTON UPON TRENT. THE GENERAL HOSPITAL. HOUSE SURGEON required at the above Hospital as from 1st November, 1956. Post recognised for pre-registration purposes.

Apply Group Secretary.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER in Casualty and Orthopædics which will become vacant on 31st July, 1956. This post is recognised for the F.R.C.S.

Applications, stating details of experience, qualifications and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (pathology).

Apply, stating age, qualifications, experience, nationality, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House SURGEON for 6 months from 1st September. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to Secretary by 4th August. Interviews 10th August.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (188 Beds.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of RESIDENT HOUSE OFFICER (surgical) which will become vacant on 8th August next. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

CHELMSFORD AND ESSEX HOSPITAL. Applications are invited for the resident post of CASUALTY OFFICER (Senior House Officer). It is recognised for the F.R.C.S. and offers excellent experience in the treatment of fractures and diagnosis of acute medical and surgical emergencies. Opportunity is given for Casualty Officer to follow up his cases in the wards and to obtain operating experience in major theatre under the guidance of the Consultants or the Resident Surgical Officer. Off duty time is generous and the post is one likely to suit both an officer seeking a higher qualification in surgery or one intending General Practice. The vacancy will occur on 2nd September.

Apply Secretary, Chelmsford Hospital Management Committee, Chelmsford and Essex Hospital, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL. (162 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). The post will become vacant on 30th August, and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD HOSPITALS. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer) to large surgical units, for a period of 12 months.

Applications, stating age, qualifications and experience, with recent testimonials, should be sent to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL. (202 acute beds.) RESIDENT HOUSE SURGEON required for 6 months appointment. National salary scale for first, second or third posts. Post approved for pre-registration practitioners. Also recognised for F.R.C.S. 7 residents including Resident Surgical Officer and 3 House Surgeons. Vacant 13th August, 1956.

Applications, stating age, experience, qualifications, with references or names of referees, to Senior Administrative Officer.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL. (202 acute beds.) SENIOR HOUSE SURGEON (Deputy Resident Surgical Officer) required at above Hospital. Post recognised for F.R.C.S. Resident staff of 6—Resident Surgical Officer, 3 House Surgeons, Resident Medical Officer and House Physician. Salary £745 p.a., less residential charge. Vacant 12th August, 1956.

Applications, stating age, experience, qualifications, with references or names of referees, to Senior Administrative Officer.

CHESTERFIELD ROYAL HOSPITAL. (324 Beds. Recognised for the D.A. and F.F.A.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) with additional duties when required at other hospitals in the group. Experience in all types of anæsthesia, except for neurosurgery, can be obtained in this group of hospitals. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 30th July, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for :—

Essex County Hospital, Colchester (19 gynæcological beds), **Colchester Maternity Hospital** (22 obstetric beds)

HOUSE OFFICER (Male or Female), obstetric and gynæcological, first, second, third, or pre-registration post ; tenable for 6 months.

Black Notley Hospital, Braintree (516 Beds)

Posts for HOUSE SURGEON AND HOUSE PHYSICIAN. The successful applicant will serve 6 months as House Surgeon followed by 6 months as House Physician. First, second, third, or pre-registration posts. Surgical post includes duties in general surgical and gynæcological wards. Recognised for F.R.C.S. Medical post includes duties in medical and pædiatric wards.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

CREWE AND DISTRICT MEMORIAL HOSPITAL. (108 Beds—Acute.) Resident Locum REGISTRAR (surgical) required at the above Hospital (approved for F.R.C.S.), period 18th August–31st October. Salary in accordance with Whitley Council scale.

Applications to be sent to the Group Secretary, Group Headquarters, Barony Hospital, Nantwich, as soon as possible.

CROYDON GENERAL HOSPITAL. (200 Beds.) Croydon GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR CASUALTY OFFICER (Registrar status), post vacant. Busy department. Post recognised for Final F.R.C.S. examination. Accommodation may be inspected on application to Hospital Secretary.

Application forms obtainable from Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned within 14 days.

CROYDON GROUP HOSPITAL MANAGEMENT COM-MITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for appointment of ORTHOPÆDIC REGISTRAR. Duties involving both orthopædic and fracture work. Previous orthopædic experience essential. Post vacant 20th October, 1956.

Application forms from Group Secretary, Management Committee, General Hospital, London-road, Croydon.

CROYDON. MAYDAY HOSPITAL. (611 Beds.) Locum Tenens SURGICAL REGISTRAR required at Mayday Hospital from 14th August to 17th November, 1956.

Applications to Group Secretary, Croydon Group Hospital Management Committee, General Hospital, London-road, Croydon.

DERBY. DERBYSHIRE HOSPITAL FOR WOMEN. (60 Beds.) HOUSE SURGEON (pre-registration) or SENIOR HOUSE OFFICER (gynæcology), vacant 15th September. Recognised as pre-registration post in surgery and for training for the M.R.C.O.G. in gynæcology only.

Apply, stating age, experience and whether pre-registration candidate, with 2 copy testimonials, to Group Secretary, No. 1 Hospital Management Committee, Babington-lane, Derby.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House SURGEON (pre-registration) or SENIOR HOUSE OFFICER (gynæcology), vacant 1st September, 1956. Recognised for M.R.C.O.G.

Applications, stating full details with copies of 2 recent testimonials, to Secretary.

DERBY. DERWENT HOSPITAL. (187 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (chest and infectious diseases) required. Private quarters available. A Consultant Thoracic Surgeon attends this Hospital each week. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 30th July, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DONCASTER ROYAL INFIRMARY. (330 Beds. Recognised for training for F.R.C.S. examination.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (orthopædics) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 30th July, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DONCASTER ROYAL INFIRMARY. Applications are invited for the post of SENIOR HOUSE OFFICER in the Orthopædic Department.

Applications to the Group Secretary, Doncaster Hospital Management Committee, at Doncaster Royal Infirmary.

DORCHESTER. DORSET COUNTY HOSPITAL. West DORSET GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SURGICAL REGISTRAR (Registrar grade) at above Hospital. Salary according to experience, with a deduction at the rate of £160 p.a. for residence. Canvassing will disqualify, but Hospital may be visited by arrangement.

Application form, obtainable from Group Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, Dorset, to be returned by Monday, 30th July, 1956.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. (1) SURGICAL REGISTRAR (casualty), Peterborough Memorial Hospital (150 Beds). 6 months of tenure recognised for F.R.C.S. Appointment for 1 year, renewable for second year. Candidates invited to visit Hospital by direct arrangement with the Hospital Secretary.

(2) MEDICAL REGISTRAR, United Norwich Hospitals. Ward duties at West Norwich Hospital and Norwich Isolation Hospital and outpatient clinics at Norfolk and Norwich Hospital. Post provides wide experience in general medicine. Appointment for 1 year, renewable for second year. Candidates invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary, Norfolk and Norwich Hospital, Norwich.

Applications, stating age, experience and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 30th July, 1956.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. (1) SURGICAL REGISTRAR, West Suffolk General Hospital, Bury St. Edmunds (285 Beds). Duties include work in Orthopædic Department. Post recognised for F.R.C.S. Furnished flat available. Appointment for 1 year, renewable for second year.

(2) ANÆSTHETIC REGISTRAR, West Suffolk Genera Hospital, Bury St. Edmunds (285 Beds). Post recognised for D.A. and F.F.A.R.C.S. Furnished flat available. Appointment for 1 year available for second year.

Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

Applications, stating age, experience and names of 3 referees, to Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 6th August, 1956.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. Locum SENIOR REGISTRAR in Pathology required from early August, 1956, for 2 months in the first instance at above Hospital.

Apply immediately to Medical Director (Telephone : Edgware 2381).

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT HOUSE PHYSICIAN for Thoracic and Dermatological Departments. Duties to include " taking of acute general medical cases." 6 months appointment. Post vacant 5th September, 1956.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 4th August, 1956.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE SURGEON (pre-registration post), vacant 22nd September, 1956. Duties with General Surgical Unit doing some genito-urinary work. Post recognised by the Royal College of Surgeons. 6 months appointment.

Applications, with names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (anæsthetics), resident or non-resident, vacant 10th August, 1956. The post is recognised for the F.F.A.R.C.S. examination.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. Applications are invited from pre-registration and registered medical practitioners for the appointment of HOUSE PHYSICIAN (2), vacant 12th September and 22nd September, 1956, respectively.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary by 28th July, 1956.

FARNBOROUGH HOSPITAL, Kent. (800 Beds.) Senior HOUSE OFFICER in Anæsthetics required for 1 year from 1st September. Recognised for D.A. and F.F.A.R.C.S.

Apply, stating age, qualifications with dates, and experience and naming 3 referees, to Administrative Officer by 4th August.

GLASGOW NORTHERN HOSPITALS BOARD OF MANAGEMENT. RUCHILL HOSPITAL, CHEST DEPARTMENT (MEDICAL UNIT), GLASGOW, N.W. Applications are invited for 1 JUNIOR HOSPITAL MEDICAL OFFICER post, and 1 post-registration HOUSE OFFICER post. The Chest Department consists of 184 Beds for the treatment of pulmonary tuberculosis and other diseases of the chest. There is attached to the department a Thoracic Surgical Unit of 60 Beds, so that the post offers a wide variety of experience. Facilities are offered for research and postgraduate study.

Applications, stating age, qualifications and experience, to the Physician-Superintendent as soon as possible.

GLASGOW, S.W.1. SOUTHERN GENERAL HOS-PITAL. SENIOR HOUSE OFFICER in Surgery.

Write to Secretary, Board of Management for Glasgow South-Western Hospitals, 1301, Govan-road, Glasgow, S.W.1, naming 2 referees.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL, DENE SIDE, GREAT YARMOUTH. HOUSE PHYSICIAN required. Post vacant 1st August, 1956. The post is a pre-registration post at a salary of £425, £475, or £525 p.a., according to experience, less £125 p.a. for residence. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications, and experience, with names of 2 referees, to Hospital Secretary.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (233 Beds.) RESIDENT HOUSE SURGEON required for general surgery. Post is vacant on 27th August and tenable for 6 months. It is approved for pre-registration practitioners and recognised for the F.R.C.S. examination.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary as soon as possible.

HASTINGS AND ST. LEONARDS. BUCHANAN HOSPITAL. (94 Beds.) SENIOR HOUSE OFFICER for Urology. Post vacant approximately 8th August, recognised for F.R.C.S. Good married quarters available if required.

Apply to Hospital Administrator giving names of 3 referees.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopædic). Post vacant 20th August, 1956.

Apply to Hospital Administrator.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (163 Beds.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of RESIDENT HOUSE OFFICER (surgical) which will become vacant on 1st August next. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general) (first, second, or third post). To commence immediately. Pre-registration post; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HILLINGDON HOSPITAL, Uxbridge. (621 Beds.) REGISTRAR required in Department of Anæsthetics. Post recognised for F.F.A.R.C.S. Resident or non-resident. Hospital may be visited by direct appointment.

Application forms obtainable from and returnable to, Group Secretary, Uxbridge Group Hospital Management Committee, The Furze, Pield Heath-road, Hillingdon, Middlesex, by 31st July.

HILLINGDON HOSPITAL, Hillingdon, Uxbridge, Middlesex. (General—621 Beds.) 2 HOUSE SURGEONS required. Combined post in obstetrics and gynæcology, recognised for D.Obst.R.C.O.G. and M.R.C.O.G. Posts vacant middle August.

Apply, stating age, nationality, qualifications, experience, and enclosing copies of not more than 3 recent testimonials, to Medical Director by 30th July.

HOLT, NORFOLK. KELLING HOSPITAL AND DEPARTMENT OF THORACIC SURGERY. Applications are invited for the following posts.

(1) Locum JUNIOR HOSPITAL MEDICAL OFFICER (minimum of 4 months).

(2) SENIOR HOUSE OFFICER.

This Hospital (180 Beds) deals with tuberculous and non-tuberculous chest conditions and offers excellent experience in chest medicine and thoracic surgery.

Applications, stating age, sex, qualifications, nationality and experience, together with names of 2 referees, to the Group Secretary, Cromer Area Hospital Management Committee, Cliff Avenue, Cromer, Norfolk, who will be pleased to supply any other information concerning the appointments.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HOUSE SURGEON required to commence duties immediately. The post is recognised as a pre-registration appointment and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.

The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.) Applications are invited for the post of CASUALTY OFFICER. The post, which is resident, is graded Junior Hospital Medical Officer and is recognised under the Fellowship regulations. Duties terminate at 7 P.M. daily with 1 night weekly on call.

Applications for the appointment, which will be vacant on 1st September, 1956, should be accompanied by copies of 3 recent testimonials and addressed to—

H. J. JOHNSON, Group Secretary.

The Royal Infirmary, Huddersfield.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required for the above Hospital from 20th August, 1956. Registration or pre-registration post. 6-monthly term. Recognised for the D.C.H. qualification. Salary according to national scale.

Replies, with testimonials, should be sent to the Hospital Secretary.

HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in the E.N.T. Department of the Victoria Hospital for Sick Children and the Hull Royal Infirmary. The post which will become vacant on 23rd August, 1956, is recognised for the F.R.C.S. and D.L.O.

Applications, with testimonials, should be sent to the Secretary, Victoria Hospital for Sick Children, Park-street, Hull.

HUNTINGDON COUNTY HOSPITAL. Applications are invited for the post of HOUSE OFFICER (surgical), now vacant. Post recognised for pre-registration purposes.

Apply, with full particulars and names of 2 referees, to Secretary, County Hospital, Huntingdon.

ISLEWORTH, WEST MIDDLESEX HOSPITAL. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time) in Obstetrics and Gynæcology. 1 year in first instance. Hospital may be visited by direct appointment. Post vacant 1st October, 1956.

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 31st July, 1956.

IPSWICH AND EAST SUFFOLK HOSPITAL, Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Resident Anæsthetist). The post, which becomes vacant on 20th August, 1956, and is normally of 1 years duration, is recognised for the D.A. and the F.F.A.R.C.S. examinations.

Applications, stating age and nationality, together with recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL, Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

KIDDERMINSTER AND DISTRICT GENERAL HOSPITAL. (112 Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON at the above Hospital. Post vacant from 28th August.

Applications, with the names of 3 referees, to the Hospital Secretary.

KINGSTON HOSPITAL, Wolverton-avenue, Kingston-ON-THAMES. Applications are invited from suitably qualified and experienced medical officers for the post of MEDICAL REGISTRAR (full-time) which is available on 1st November, 1956. The successful candidate will be required to live in the Hospital or alternatively occupy a duty room when on duty.

Forms of application are obtainable from the Group Secretary, Kingston Group Hospital Management Committee, 35, Coombe-road, Kingston (a stamped addressed envelope to be enclosed) and should be returned to him within 10 days of the appearance of this advertisement.

KINGSTON HOSPITAL, Wolverton-avenue, Kingston UPON THAMES. KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from suitably qualified medical officers for the post of SENIOR HOUSE OFFICER (general surgery) which is available on 1st September, 1956, and recognised for F.R.C.S. purposes.

Applications, stating age, qualifications and experience, with 2 testimonials, should reach the Physician-Superintendent of the Hospital within 7 days of this advertisement.

KINGSTON HOSPITAL, Wolverton-avenue, Kingston UPON THAMES. KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from suitably qualified medical officers for the post of SENIOR HOUSE OFFICER (orthopædic and casualty) which is available early September and recognised in casualty for F.R.C.S. purposes.

Applications, stating age, qualifications and experience with 2 testimonials, should reach the Physician-Superintendent of the Hospital within 7 days of this advertisement.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Applications are invited from pre-registration candidates for an appointment as HOUSE PHYSICIAN for 6 months to be followed, if satisfactory, by an appointment as House Surgeon for a further 6 months.

Apply, giving full particulars, to—

R. W. HOWICK, Group Secretary.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Applications are invited from pre-registration candidates for an appointment as HOUSE SURGEON for 6 months to be followed, if satisfactory, by an appointment as House Physician for a further 6 months.

Apply, giving full particulars, to—

R. W. HOWICK, Group Secretary.

LINCOLN. COUNTY HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER in Surgery which is now vacant. The post is recognised for F.R.C.S.

Apply, with full particulars and references, to the Group Secretary, County Hospital, Lincoln.

LIVERPOOL. FAZAKERLEY GROUP OF HOSPITALS MANAGEMENT COMMITTEE. AINTREE HOSPITAL, LIVERPOOL, 9. Applications are invited from registered medical practitioners for post of RESIDENT SENIOR HOUSE OFFICER (surgical). The Hospital is for the treatment of pulmonary and non-pulmonary tuberculosis, and is a main centre for thoracic surgery and has an Orthopædic Department. Salary will be in accordance with terms and conditions of service for hospital medical staff.

Applications, endorsed Resident Senior House Officer, to be submitted immediately to the Physician-Superintendent.

LIVERPOOL RADIUM INSTITUTE, Liverpool, 7. Applications are invited for a resident post in the JUNIOR HOSPITAL MEDICAL OFFICER grade. Salary scale £775–£50–£1075 according to experience. This appointment is particularly valuable to practitioners who contemplate adopting Radiotherapy as a special career. On the other hand, it provides an excellent opportunity for studying for a higher qualification either in medicine or in surgery.

Applications, giving particulars of age and experience, together with names and addresses of 2 referees, should reach the Medical Director as soon as possible.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of REGISTRAR in Radiology for the period 1st October, 1956, to 30th September, 1957. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply by 4th August, 1956, on form obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LUTON AND DUNSTABLE HOSPITAL. (250 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. **ANÆSTHETIC REGISTRAR (resident or non-resident) required at above Hospital and associated Units (134 Beds). Post vacant 1st September, 1956. The Hospital may be visited by direct appointment.**

Application forms obtainable from the Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, and returnable by 31st July, 1956.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Chest Diseases

Scotton Banks Sanatorium, Knaresborough. 200 staffed beds. Visiting Staff includes Teaching Hospital Consultants. Resident.

General Medicine

Regional Rheumatism Centre, Harrogate (240 Beds) (9 sessions). Rheumatism Clinic, General Infirmary, Leeds (2 sessions). Resident Royal Bath Hospital, Harrogate.

General Surgery

Hull Royal Infirmary (80 general surgical beds) and other hospitals in the Hull A Group. Duties those of Resident Surgical Officer and includes additional duties in the Casualty Department.

Obstetrics and Gynæcology

Hospitals in the Hull A Group (64 obstetric and 74 gynæcological beds). Recognised for M.R.C.O.G. Resident.

Orthopædic Surgery

St. James's Hospital, Leeds (64 orthopædic beds), and the Public Dispensary, Leeds. Non-resident.

Psychiatry

(1) Clifton Hospital, York (1100 Beds). Resident or non-resident.

(2) Menston Hospital, near Leeds (2500 Beds). Resident.

If desired, facilities for attendance at Leeds University will be provided if the successful candidates are studying for the D.P.M.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 27th July.

MACCLESFIELD HOSPITAL. West Park Branch. Applications invited SENIOR HOUSE OFFICER (pædiatrics). Department is a busy one of 35 Beds and 30 neonatal cots and is recognised for purposes of Diploma in Child Health and provides invaluable experience.

Apply immediately Group Secretary, Macclesfield and District Hospital Management Committee, "Willerby House," Cumberland-street, Macclesfield.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON. 6 months appointment. Post vacant now. Salary at the rate of £425, £475 or £525 according to experience. A deduction at the rate of £125 a year is made for board and lodging and other services provided.

Applications should be forwarded as soon as possible to the Administrative Officer at the Hospital.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL AND ANNEXE. (130 Beds.) Applications are invited for the pre-registration post of JUNIOR HOUSE OFFICER (surgical).

Applications to Group Secretary, North and Mid Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL AND ANNEXE. (130 Beds.) Applications are invited for the pre-registration post of JUNIOR HOUSE OFFICER (medical).

Applications to Group Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER. BOOTH HALL CHILDREN'S HOSPITAL, BLACKLEY, MANCHESTER, 9. There are vacancies for 2 SENIOR HOUSE OFFICERS (surgical), 1 with duties mainly on general surgery and 1 with duties mainly on orthopædics. These posts are recognised for the D.C.H. and tenure of a surgical post allows of preferment to the medical side later if desired.

Applications, with the usual particulars and copies of 2 recent testimonials, to the Medical Superintendent as soon as possible.

MANCHESTER, 23. WYTHENSHAWE HOSPITAL. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (E.N.T.) for the above named Hospital. The post is recognised by the Royal College of Surgeons of England.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, should reach the Group Secretary, Withington Hospital, Manchester, 20, within 7 days of the appearance of this advertisement.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for REGISTRAR in Surgery at Bury General Hospital, the post falling vacant at the end of August. Post recognised for F.R.C.S.

Applications, together with the names of 2 referees, should be sent to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in Chest Diseases with main duties at the Manchester Chest Clinic and also in the Thoracic Surgery Units at Park and Baguley Hospitals, &c.

Application forms, obtainable from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, should be returned by 6th August, 1956.

MANCHESTER REGIONAL HOSPITAL BOARD invites applications for the post of REGISTRAR in Pathology. The duties will be with the Stockport and Buxton Hospital Management Committee and the successful candidate will work under the direction of the Consultant Group Pathologist. The post is recognised for the Diploma in Pathology.

Applications, stating age, experience, and qualifications, together with copies of 2 testimonials, to be addressed to the Group Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD invites applications for the post of RESIDENT REGISTRAR in Obstetrics and Gynæcology. The duties will be with the Stockport and Buxton Hospital Management Committee, mainly at Stepping Hill Hospital and Stockport Infirmary, where there are 72 obstetric and 48 gynæcological beds. The post is recognised for M.R.C.O.G. and is vacant 1st October, 1956.

Applications, stating age, experience, and qualifications, together with the names of 2 referees, to be forwarded to—

H. G. PRICE, Group Secretary.

59B, Shaw-heath, Stockport, Cheshire.

MANCHESTER. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) with duties in the South Manchester Group. This post is recognised by the Royal College of Surgeons for the F.F.A.R.C.S. and for the D.A.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded immediately to the Group Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the 4 posts of HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The posts are recognised for the purpose of the M.R.C.O.G. examination. The appointment is for 6 months starting 1st October, 1956. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 31st July.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR HOUSE OFFICER (surgical) to commence on 2nd November, 1956. Whole-time non-resident training post, tenable for 6 months, renewable for a second 6 months. Duties allotted in Orthopædic, Surgical Outpatients and General Surgical Units in rotation.

Application form obtainable from the undersigned, to be returned by 4th August, 1956. G. H. TAYLOR, Secretary.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) 3 HOUSE OFFICERS (general surgery) required, pre-registration. Posts recognised for F.R.C.S. examination. Posts vacant, mid-October, end October, mid-November respectively.

Application forms from Secretary.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (pædiatrics) in the Obstetric Unit at Withington Hospital (over 2000 cases annually) with some pædiatric duties at other hospitals in the group.

Applications, stating age, nationality, experience, and the names of 2 referees, to the Group Secretary, Withington Hospital, Manchester, 20.

MARGATE. ROYAL SEA BATHING HOSPITAL. (Surgical Tuberculosis and Orthopædics—241 Beds.) SENIOR HOUSE OFFICER. This post (1 of 2) is largely an orthopædic one, and affords experience in the treatment of tuberculous and non-tuberculous orthopædic conditions. There is also a Genito-urinary Unit of 35 Beds and a small number of beds for other tuberculous conditions. The post is recognised for the F.R.C.S., and is suitable for someone reading for a higher surgical examination. Salary £745 p.a., less £150 for residential emoluments.

Applications, with copies of testimonials, to Hospital Secretary.

NOTTINGHAM. HIGHBURY HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER (Obstetrical and Gynæcological Department; 41 obstetric beds, 11 gynæcological beds, and a small block for puerperal pyrexia). Duties to commence as soon as possible. The Hospital is recognised for the M.R.C.O.G. (obstetrics only). Previous obstetrics experience required.

Applications, stating age, qualifications, experience and nationality, together with copies of recent testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. E.N.T. DepartMENT. A SENIOR HOUSE OFFICER (E.N.T.) required at above Hospital. This post is recognised for the D.L.O. and F.R.C.S. examinations. Salary and conditions of service in accordance with Ministry regulations. Duties to commence about 1st September.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (medical) required. Duties to commence about 31st August, 1956.

Applications, stating age, qualifications nationality and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Resident Pre-registration HOUSE PHYSICIAN required. Duties to commence about 27th July, 1956.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications invited for CLINICAL PATHOLOGIST (Senior House Officer grade), duties to commence on or about 21st August. Previous experience in pathology not essential. Opportunities for training in all branches of clinical pathology are afforded in a department serving over 1200 beds.

Applications, stating names and addresses of 3 referees, to be sent as soon as possible to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (anæsthetics) required as soon as possible. The post is recognised for the D.A., and the F.F.A.R.C.S. This is a busy general hospital giving experience in all branches of surgery.

Applications, stating age, nationality, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM CHILDREN'S HOSPITAL. (136 Beds. Recognised for the D.C.H.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgical). The post is tenable for 6 months or a year by agreement.

Applications, with copies of 2 testimonials, should be sent to the Secretary, Nottingham Children's Hospital, Chestnut-grove, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (811 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (general surgery) vacant 12th September, 1956. The post is approved for the F.R.C.S. The officer appointed will also be required to undertake certain duties in the Orthopædic Department. A deduction of £150 p.a. will be made for residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (811 Beds.) Applications are invited for the post of HOUSE PHYSICIAN, vacant 1st September, 1956. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (811 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 1st September, 1956. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications, and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NEWCASTLE REGIONAL HOSPITAL BOARD.

(1) **Tees-side Hospital Management Committee**

Surgical Team No. 2—Main Hospitals: North Ormesby (182 Beds); Hemlington (274 Beds)

REGISTRAR SURGEON (whole-time), resident or non-resident to reside in Middlesbrough. Single accommodation available. Post recognised for F.R.C.S.

(2) **Gateshead Hospital Management Committee**

REGISTRAR SURGEON (whole-time), resident, at Dunston Hill Hospital. Single accommodation available.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6, within 14 days.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the resident appointment of SENIOR HOUSE OFFICER to the Department of Obstetrics and Gynæcology. The appointment is for 1 year, and will be subject to the terms and conditions of service of hospital medical staff. The salary will be at the rate of £745 p.a., subject to the appropriate deductions.

Applications, giving full details, and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the date of appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the non-resident appointment of SENIOR HOUSE OFFICER to the Department of Psychological Medicine at the Royal Victoria Infirmary. The successful candidate will have opportunity for clinical experience in inpatient and outpatient work under the direction of the Head of the department and he will also be responsible for emergency duty as required. The appointment is for 1 year and will be subject to the terms and conditions of service of hospital medical staff.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWPORT, MONMOUTHSHIRE. ROYAL GWENT HOSPITAL. (260 Beds. Recognised D.L.O.) JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (E.N.T. and eyes) required. Resident. Post covers 23 E.N.T. and 8 eye beds. National salary scale, less £125 board-residence.

Write, quoting 2 referees, to Group Secretary, 64, Cardiff-road, Newport, Mon.

NORTH GLOUCESTERSHIRE CLINICAL AREA. The BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards for the joint appointment of REGISTRAR in General Surgery. The appointment will be held for 1 year in the first instance, and be renewable for a further year. The successful candidate will be appointed to work for the first year mainly at Cheltenham General, Eye and Children's Hospital but may be required to undertake duties in other hospitals in the area.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 15th August, 1956.

OXFORD. UNITED OXFORD HOSPITALS. Applications are invited for the post of HOUSE SURGEON in the Thoracic Surgery Unit at the Churchill Hospital, to commence as near as possible to 1st August, for 6 months.

Applications, stating age, qualifications and experience, together with names of 2 referees, to Administrative Assistant, Radcliffe Infirmary, Oxford, as soon as possible.

OXFORD REGIONAL HOSPITAL BOARD. Registrar in Thoracic Surgery at Peppard Chest Hospital, near Reading (236 Beds, including 60 for surgical cases). The special Surgical Unit contains 34 Beds. Married or single accommodation available. Post available from 1st October, 1956, for an initial period of 1 year.

Application forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 11th August.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER in Anæsthetics, vacant 1st October, 1956. Recognised for the D.A. and F.F.A.R.C.S. The appointment will be for a period of 12 months.

SENIOR HOUSE OFFICER in Casualty, vacant 1st September, 1956. Recognised for the F.R.C.S., for the Central Casualty Department.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Saint Mary's Hospital

SENIOR HOUSE OFFICER (gynæcology) required. The department consists of 50 Beds and offers excellent facilities for training. Recognised for M.R.C.O.G. Vacant now.

Queen Alexandra Hospital

SENIOR HOUSE OFFICER for Gynæcological Department (39 Beds), vacant now. Recognised for M.R.C.O.G.

Royal Portsmouth Hospital (Orthopædic Department—104 Beds)

HOUSE OFFICER (pre-registration), vacant now.

Queen Alexandra Hospital (78 medical beds)

HOUSE PHYSICIAN (pre-registration), vacant 30th July.

Saint Mary's Hospital (74 medical beds)

HOUSE PHYSICIANS (pre-registration), vacant 30th July (1), and 31st July (2).

Saint Mary's Hospital (130 surgical beds)

HOUSE SURGEONS (pre-registration). Posts vacant 23rd, 29th and 30th July.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to E. H. HURST.

35, Grove-road South, Southsea.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post, vacant 8th October, 1956, of ANÆSTHETIC REGISTRAR in the Portsmouth Group, main duties at Queen Alexandra Hospital. 5 Consultant Anæsthetists practise in the Group. Post recognised for F.F.A.R.C.S.

Forms of application may be obtained from the Group Secretary, Portsmouth Group Hospital Management Committee, 35, Grove-road South, Southsea, which should be returned to him duly completed on or before 30th July, 1956. Canvassing will disqualify. Candidates may visit the above Hospital by arrangement with the Secretary of the Group.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER for E.N.T. Department, Royal Berkshire Hospital, Reading (40 Beds). Post recognised for D.L.O.

Applications, stating age, nationality, experience and qualifications, together with names of 2 referees, should be sent to Group Secretary, 3, Craven-road, Reading.

READING AREA DEPARTMENT OF MEDICINE. Applications are invited from provisionally registered medical practitioners for 3 posts as RESIDENT HOUSE PHYSICIAN all vacant 1st September, 1956, for a period of 6 months. Successful applicant will be required to carry out duties at the following Reading Hospitals: Royal Berkshire (399 Beds), Battle (301 Beds), Prospect Park (104 Beds).

Write before 31st July, stating age, qualifications with dates, nationality, present post with copy of a recent testimonial, to the Secretary, Royal Berkshire Hospital, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (399 Beds.) Applications are invited from provisionally registered medical practitioners, Male and Female, for resident post of HOUSE SURGEON, vacant 21st August, 1956, and tenable for 6 months.

Write before 10th August, stating age, qualifications with dates, nationality, present post with copy of 1 recent testimonial, to the Secretary.

READING. BATTLE HOSPITAL. (391 Beds.) Applications are invited from registered medical practitioners for post of RESIDENT JUNIOR HOUSE SURGEON in the Area Accident and Orthopædic Department, vacant 1st August, 1956. F.R.C.S. recognised. Also casualty duties. Salary £425–£525 p.a., less £125 board-residence.

Apply, stating age, qualifications with dates, nationality, present post with 1 copy of recent testimonial, to Hospital Secretary.

READING COMBINED HOSPITALS. Area Department OF OBSTETRICS AND GYNÆCOLOGY. (100 Beds.) Applications are invited from registered medical practitioners, Male and Female, for resident appointment of GYNÆCOLOGICAL HOUSE SURGEON at the Royal Berkshire Hospital, vacant immediately and tenable for 6 months. Post recognised for M.R.C.O.G.

Write, stating age and qualifications with dates, nationality, and present appointment, with a copy of 1 recent testimonial, to the Secretary.

RICHMOND, SURREY. ROYAL HOSPITAL. (Acute General Hospital—121 Beds.) Locum RESIDENT SURGICAL REGISTRAR required over period 3rd–20th September, 1956, inclusive.

Apply to Administrative Officer.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (622 Beds.) Required, SENIOR HOUSE OFFICER (medical). Post resident and tenable for 1 year, commencing 3rd September, 1956, for duties in a modern general hospital.

Applications, &c., to reach the undersigned by 4th August, 1956. J. C. FIELD, Secretary.

General Hospital, Rochford, Essex.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Applications are invited for the appointment of SENIOR HOUSE OFFICER (surgery). Post recognised for F.R.C.S. and is resident. Post vacant approximately mid-August.

Applications, stating age, &c., to reach the undersigned by 4th August. J. C. FIELD, Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE SURGEONS (3) required on 16th and 24th August and 29th September, 1956, in the General Surgical Unit at the above Hospital. Recognised for F.R.C.S. Open to either pre-registration applicants or to fully qualified practitioners. This very active General Surgical Unit of a total of approximately 180 Beds affords ample opportunities for candidates to obtain first-class tuition and experience. The candidates appointed will be attached to units of approximately 60 Beds.

Applications should be forwarded to reach the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, by 27th July, 1956.

ROMFORD. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT SENIOR HOUSE SURGEON required from 30th July, 1956. Recognised for F.R.C.S. (No married quarters available.)

Applications should be forwarded immediately to Medical Superintendent, stating also names of 2 referees.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE OFFICER (general surgery), required from 7th August, 1956. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications should be forwarded immediately to Medical Superintendent, stating also names of 2 referees.

RHYL. ROYAL ALEXANDRA HOSPITAL. Applications are invited for appointment, as from 1st August, 1956, of SENIOR HOUSE OFFICER (surgery) at the above Hospital.

Applications, stating age, qualifications, and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Clwyd and Deeside Hospital Management Committee, "Rhianfa," Russell-road, Rhyl, within 10 days from the date of publication of this advertisement.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of SENIOR REGISTRAR in Psychiatry at Craig Dunain Hospital, Inverness. Married quarters available.

Forms of application and further particulars may be obtained from the undersigned, with whom applications should be lodged by 20th August, 1956. A. M. FRASER, M.D., Secretary and Administrative Medical Officer.

Office of the Northern Regional Hospital Board, Raigmore, Inverness.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Psychiatry—main duties at Kingseat Hospital under the Board of Management for the Aberdeen Mental Hospitals. Candidates should have experience in their specialty and preferably hold an appropriate higher qualification.

Applications, giving 2 names for reference, should be submitted by 25th August, 1956, to the Secretary, 1, Albyn-place, Aberdeen, from whom further particulars may be obtained.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

SENIOR REGISTRAR in Radiotherapy based at the Western Infirmary, Glasgow.

REGISTRAR in Psychiatry based at Hawkhead Mental Hospital, Glasgow.

4 REGISTRARS in Surgery based at the Royal Infirmary, Glasgow, for duties on a rotational basis within the surgical, orthopædic and special surgical units.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 4th August, 1956.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Anæsthetics. DUNDEE TEACHING HOSPITALS. Applications are invited for a post as SENIOR REGISTRAR in Anæsthetics at the Dundee Teaching Hospitals—Dundee Royal Infirmary (510 Beds) and Maryfield Hospital (360 Beds), the main general teaching hospitals associated with the University of St. Andrews. Salary and conditions of service in accordance with national agreement.

Forms of application and further particulars from the Secretary to the Board, "Bracknowe," 430, Blackness-road, Dundee, with whom applications must be lodged not later than 11th August, 1956.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Cardiology. DUNDEE TEACHING HOSPITALS. Applications are invited for the post of SENIOR REGISTRAR in Cardiology in the Units under the charge of the Professor of Medicine in the University of St. Andrews at Dundee Royal Infirmary (510 Beds) and Maryfield Hospital, Dundee (360 Beds), the main general teaching hospitals associated with the University. Higher qualifications and previous experience in cardiology essential. Salary and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 11th August, 1956.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. ARBROATH INFIRMARY. General Surgery. Applications are invited for the post of SENIOR REGISTRAR in General Surgery at Arbroath Infirmary (105 Beds—40 general surgical). This is a "transitional" post and a higher surgical qualification and previous experience are essential. Salary £1400 p.a. Modern house available to rent if required.

Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 18th August, 1956.

SHEFFIELD. CITY GENERAL HOSPITAL. (652 Beds. Recognised for the M.R.C.O.G.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (obstetrics and gynæcology) required at the City General Hospital, Sheffield (106 obstetrical and 42 gynæcological beds). Post vacant 1st December. Duties mainly in Professorial Unit. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 31st August, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Sheffield NATIONAL CENTRE FOR RADIOTHERAPY. Whole-time NON-RESIDENT SENIOR REGISTRAR required. Candidates should possess the Diploma in Radiotherapy or a higher qualification in medicine or surgery. Duties mainly in Sheffield but there may be occasional duties at associated centres in the region. Appointment for 1 year in first instance, reviewable annually.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 18th August, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR REGISTRAR in Psychiatry required for Middlewood Hospital, Sheffield (2098 Beds). D.P.M. essential. House available. Appointment for 1 year in the first instance, reviewable annually. Opportunity for research and experience in the special branches of psychiatry available in the Hospital area.

Application forms and further details obtained from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 6th August, 1956.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL HOSPITAL UNIT. Applications invited for the following posts :—

(*a*) NON-RESIDENT REGISTRAR or SENIOR HOUSE OFFICER in General Medicine. Grade according to qualifications and experience.

(*b*) REGISTRAR to the Department of Neurology. Post vacant 11th October. This is a large Neurological Department in a Teaching Hospital Group. Post offers wide experience and opportunities for postgraduate training and for attending postgraduate teaching in other departments.

Applications should give the names of 3 referees and be sent not later than 28th July to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHREWSBURY. CROSS HOUSES HOSPITAL. (34 maternity beds.) OBSTETRIC HOUSE SURGEON (pre-registration post), vacant 12th August, 1956.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SOUTHAMPTON CHEST HOSPITAL. (261 Beds.) SENIOR HOUSE OFFICER required from mid-August, to be responsible for Infectious Diseases Unit. The duties are such as to suit a candidate reading for higher examinations. The Unit is sited at a Hospital possessing up-to-date tuberculosis and thoracic surgical units, whilst the Southampton Group of hospitals as a whole affords excellent opportunities for study and experience in all branches of medicine.

Applications, together with copies of recent testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) RESIDENT HOUSE SURGEON required early in August. Pre-registration candidates eligible.

Applications, with copies of recent testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds. Recognised for F.R.C.S.) CASUALTY OFFICER (Senior House Officer grading) required early in August.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHEND-ON-SEA. GENERAL HOSPITAL, Prittlewell Chase. Locum SURGICAL REGISTRAR (full-time) required from 15th August until such time as a permanent appointment is made.

Applications, &c., should be sent to the undersigned by 26th July, 1956. J. C. FIELD, Secretary.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Orthopædic Surgery to fill a vacancy in the approved trainee establishment in the Brighton and Lewes Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 4th August, 1956.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Psychiatry to fill a vacancy in the approved trainee establishment at Bexley Hospital, Dartford Heath, Bexley, Kent. Previous experience in general medicine is desirable. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 4th August, 1956.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Psychiatric Registrars Training Scheme. Applications are invited for the appointment of REGISTRAR for 6 months period at the Hospitals Knowle, Fareham; Coldeast, Sarisbury, near Southampton; St. James', Portsmouth; and Moorgreen, Southampton, in succession. These appointments afford wide experience in the treatment of all forms of nervous and mental disorder, including cases admitted to the Observation Ward at Moorgreen Hospital, and in mental deficiency. In addition there are special opportunities for experience in the Department of Child Psychiatry (inpatients and outpatients) in electro-encephalography and in neurology at St. James' Hospital. The appointment will be tenable from 1st October, 1956. Salary, &c., in accordance with the agreed terms and conditions of service for hospital medical staff. For residents appropriate charges are made for full residential amenities. Candidates may visit the hospitals by appointment with the Physicians-Superintendent.

Applications to the Group Secretary, Knowle Hospital Management Committee, Knowle Hospital, Fareham, Hants, and 5 copies should be sent to him within 2 weeks of the appearance of this advertisement.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD. (Joint appointment with the United Bristol Hospitals.) Applications are invited by the above Boards for the joint appointment of REGISTRAR in Orthopædic and Traumatic Surgery to work at Winford Orthopædic Hospital and at the United Bristol Hospitals. The appointment will be held for 1 year in the first instance and be renewable for a further year.

Applications, stating date of birth, qualifications and experience together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 15th August, 1956.

SOUTHPORT GENERAL INFIRMARY. Junior Hospital MEDICAL OFFICER (resident). Whole-time casualty post, vacant early August.

Apply, stating age, nationality, qualifications, experience and copies of 2 recent testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

SUTTON AND CHEAM HOSPITAL, Cotswold-road, SUTTON, SURREY. RESIDENT SENIOR HOUSE OFFICER (Casualty Officer), vacant 7th September. Post recognised for F.R.C.S.

Applications, stating age, experience, and qualifications, with copies of recent testimonials and the names of 2 referees, to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

STOCKPORT. STEPPING HILL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (obstetrics and gynæcology), vacant 1st October, 1956.

Applications, stating age, experience, and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

STOCKPORT. STEPPING HILL HOSPITAL. (535 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgery), vacant 23rd August, 1956. The post is recognised for the F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Group Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

STOCKPORT INFIRMARY. (163 Beds.) Stockport and BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER (general surgery and ophthalmology). The post is approved for pre-registration purposes and is vacant 24th September, 1956.

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

STOCKPORT INFIRMARY. Stockport and Buxton HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (non-resident Casualty Officer), vacant 7th September, 1956. Hours of duty: 8.30 A.M.–4.30 P.M. Monday–Friday; 8.30 A.M.–NOON Saturday. The post is recognised under F.R.C.S. regulations and would suit a candidate wishing to study for higher qualifications.

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

ST. ALBANS, HERTFORDSHIRE. HILL END HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time PSYCHIATRIC REGISTRAR required at above Hospital. Duties involve work in the mental wards and Neurosis Unit. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, by 3rd August, 1956.

ST. ALBANS, HERTFORDSHIRE. CELL BARNES HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required at above Hospital. This is a modern hospital where 895 mental defectives of all types and ages are under care. Approved for D.P.M. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Hospital Management Committee, Harperbury Hospital, St. Albans, Herts, by 1st August, 1956.

ST. HELENS HOSPITAL. (196 Beds.) Applications are invited for the appointment of RESIDENT HOUSE SURGEON, which is recognised for Pre-registration Service.

Applications, stating age, date of qualification and experience, and giving 2 names for reference, should be forwarded to—

N. RICHARDS, Group Secretary,
St. Helens and District Hospital Management Committee,
Whiston Hospital, Prescot.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Locum REGISTRAR in Obstetrics and Gynæcology required from 23rd July.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. HAYWOOD HOSPITAL. Resident SURGICAL OFFICER (Junior Hospital Medical Officer) required. Post vacant early August.

Applications, with full details and copy testimonials, to Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. SENIOR HOUSE OFFICER (E.N.T.) required, vacant now. Recognised F.R.C.S. and D.L.O.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (general surgery) vacant now. Pre-registration post. Hospital recognised for F.R.C.S.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. SENIOR HOUSE OFFICER (anæsthetics) required. Post, which is tenable for 1 year, will be resident.

Applications, with names of 2 referees, to Secretary.

TORQUAY. TORBAY HOSPITAL. (166 Beds.) Senior RESIDENT HOUSE OFFICER (anæsthetics) required as soon as possible. There is a complement of 6 Resident House Officers and the Hospital is recognised for the D.A. and for the F.F.A.R.C.S.

Applications, stating qualifications, age, nationality, with copy testimonials, to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

TORQUAY. TORBAY HOSPITAL. (166 general beds.) RESIDENT HOUSE OFFICER (surgical), Male or Female, required as soon as possible. Post recognised for F.R.C.S. and pre-registration purposes. There is a complement of 5 Resident House Officers.

Applications, stating qualifications, nationality, and age together with copy testimonials (quoting reference F.955/70), to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

WAKEFIELD. THE GENERAL HOSPITAL, Park Lodge-lane. (158 Beds.) RESIDENT SURGICAL OFFICER (Senior House Officer grade) required at the above Hospital. Post vacant immediately. Salary and conditions of service in accordance with national recommendations.

Application should be made to the Group Secretary, Hospital Management Committee No. 9 Wakefield A Group, 113, Northgate, Wakefield.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for the vacant post of RESIDENT ANÆSTHETIST (Male or Female). Graded as Senior House Officer. The Hospital is recognised for the D.A. examination. Salary is £745 p.a., less a deduction of £130 p.a. for residential emoluments.

Applications, stating qualifications and experience, should be sent to— H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR in Thoracic Medicine, to serve Clwyd and Deeside Hospital Management Committee. Based at Abergele Chest Hospital, North Wales (248 Beds). Children (pulmonary and non-pulmonary), adults (pulmonary). Hospital has major thoracic unit. Resident. House available.

REGISTRAR (anæsthetics), Maelor General Hospital (591 Beds) and War Memorial Hospital (230 Beds), Wrexham. Appointment recognised for D.A.

SENIOR REGISTRAR in Oral Surgery based at Plastic Surgery, Jaw Injuries and Burns Centre, St. Lawrence Hospital, Chepstow (127 plastic surgery, 50 orthopædic beds), occasional visits elsewhere if required. Consultant in full-time charge. Hospital intakes most of Wales.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR in Psychiatry (resident or non-resident) to assist Consultant Psychiatrist. Main centre—Billinge Hospital. Active Psychiatric Unit. Modern treatment. Over 300 admissions annually. Post recognised for D.P.M. Good training facilities.

Applications, with names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

WATFORD AND DISTRICT PEACE MEMORIAL HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Radiology required for the above Hospital. Post recognised for the D.M.R.D. Hospital may be visited by direct appointment. Post vacant immediately.

Application form obtainable from, and returnable to, the Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 10 days after the appearance of this advertisement.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (208 Beds.) ORTHOPÆDIC HOUSE SURGEON (with certain casualty duties) required. Post recognised for F.R.C.S. (Eng.) examination. Intermediate or senior post depending on experience, for Orthopædic Unit (30 Beds). The Orthopædic Service is in the charge of a Consultant and Registrar closely associated with a Postgraduate Teaching Hospital.

Applications, with copies of 2 testimonials, to the Administrator.

WATFORD PEACE MEMORIAL HOSPITAL. Applications are invited from General Practitioners for the post of HONORARY CLINICAL ASSISTANT to the Casualty Department. Work entails 2 sessions weekly (Monday and Friday afternoons). Preference will be given to those with experience in Casualty and Orthopædic Departments.

Applications in writing to R. M. MASKELL, Esq., Group Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 10 days after the appearance of this advertisement.

WILLERBY, EAST YORKSHIRE (near Hull). DE LA POLE HOSPITAL. (1174 Beds—mental illness and nervous disorders.) JUNIOR HOSPITAL MEDICAL OFFICER. Hospital has admission-rate of over 850 annually. Modern reception hospital, villas and neurosis unit. All modern methods of treatment practised. The successful candidate will be engaged on work in the admission wards to a considerable extent and for duties at a Psychiatric Day Clinic to be opened shortly. Accepted for D.P.M. training. Residential.

Application forms from Group Secretary, Hull B Hospital Management Committee, at the above address.

WINDSOR. KING EDWARD VII HOSPITAL. Obstetric AND GYNÆCOLOGICAL HOUSE SURGEON required, Male or Female, for post vacant 29th August. Post recognised for both M.R.C.O.G. and D.Obst.R.C.O.G. Not a pre-registration post. Successful candidate will be resident at Old Windsor Unit of Hospital. Applicants required to be members of a Medical Protection Society.

Applications, stating age, nationality, qualifications with dates, and copies of recent testimonials or names of 3 referees, to Hospital Secretary by 27th July.

WOKING VICTORIA HOSPITAL, Woking, Surrey. (72 Beds.) SENIOR HOUSE OFFICER (post-registration appointment) required for medical and surgical duties.

Apply, with 2 testimonials, to Hospital Secretary.

WORKINGTON INFIRMARY, Cumberland. (118 Beds. Pre-registration post. Recognised F.R.C.S. (Ed.).) HOUSE SURGEON (first, second or Senior House Officer post), vacant middle of August.

Detailed applications with dates, and names of 2 referees, to Secretary.

WOLVERHAMPTON GROUP. Royal Hospital, Wolverhampton. REGISTRAR in Orthopædic and Traumatic Surgery required. All types of traumatic and orthopædic conditions, also industrial accident work and rehabilitation which is carried out at a special unit of 60 Beds.

Applications, giving full particulars of age, qualifications and experience by 31st July, to Group Secretary, Royal Hospital, Wolverhampton.

WOLVERHAMPTON GROUP.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

SENIOR HOUSE OFFICER (Anæsthetist), vacant now. Appointment recognised for D.A. and F.F.A.R.C.S.

HOUSE OFFICER (E.N.T. Department), vacant 1st August. Also listed as a pre-registration post.

HOUSE OFFICER (thoracic and general surgery), vacant 5th September. Also listed as a pre-registration post.

Apply Secretary, with copies of testimonials.

WORTHING HOSPITAL, Lyndhurst-road, Worthing. Applications are invited from registered medical practitioners for a Locum Tenens SURGICAL OFFICER (Senior House Officer grade) for a period of 3 months (August–October inclusive).

Applications, stating age, qualifications, nationality and experience, together with copies of 2 recent testimonials, to be forwarded to the Hospital Secretary immediately.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee.

CANADA. GRACE HOSPITAL, Winnipeg, Manitoba, CANADA, has vacancies for RESIDENCIES and SENIOR INTERNSHIPS. Salary $150 per month, plus room and board. Uniforms and laundry provided. Grace Hospital is an active general hospital of 230 Beds with approximately 9128 discharges per year and has several British doctors on Staff.

Applicants with credentials are invited.

Public Appointments

EAST HAM. COUNTY BOROUGH OF EAST HAM. ASSISTANT MEDICAL OFFICER OF HEALTH. Applications are invited from duly qualified medical practitioners with experience in ante- and post-natal work, child welfare work and in work of the School Health Service. Salary £1050–£50 (3)–£55 (5)–£1475 p.a.

Further particulars and form of application (returnable by 6th August, 1956) from the undersigned.

Town Hall, East Ham, E.6. R. H. BUCKLEY, Town Clerk.

BARROW-IN-FURNESS. COUNTY BOROUGH OF BARROW-IN-FURNESS. Applications are invited from registered medical practitioners holding the Diploma in Public Health or similar qualifications for the appointment of MEDICAL OFFICER OF HEALTH for the County Borough. The salary will be in accordance with the recommendations of Medical Council, Committee C of the Whitley Councils for the Health Services (Great Britain) in respect of a population not exceeding 75,000—that is, commencing between £1740 and £1955. In addition a car allowance will be paid.

Form of application and conditions of appointment may be obtained from the undersigned, to whom applications in envelopes endorsed "Medical Officer of Health" should be sent, to be received not later than NOON on Tuesday, 13th August.

LAWRENCE ALLEN, Town Clerk.

Town Hall, Barrow-in-Furness, July, 1956.

COMMONWEALTH OF AUSTRALIA. Public Service of PAPUA AND NEW GUINEA. Vacancies. DEPARTMENT OF HEALTH.

MEDICAL OFFICER (Grade 1). (Number of vacancies.) £1922 (Aust.)–£2288 (Aust.) pa. *Note.*—Married Officers receive an additional £173 p.a.

Qualifications: British (or Australian) registration; possession of D.T.M.&H. or willingness undergo course as duty when required.

Duties: General medical duties including conducting of hospitals and prevention of disease.

Eligibility: Adult British subjects under 45 years.

Appointment: Permanent subject to satisfactory probationary period.

Leave: 3 months after each 21 months in territory; additional 3 months after each 6 years service and 6 months furlough after 20 years service.

Taxation: Income derived by residents of territory from sources within territory is not at present taxable under Commonwealth legislation.

Further Information and Application Forms: Information handbooks on the Public Service of Papua and New Guinea, other information and application forms are available from the Public Service Board Representative, Australia House, Strand, London, W.C.2.

Applications: Submit on prescribed form to Public Service Board Representative, Australia House, Strand, London, W.C.2, by 11th August, 1956.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
TOTTON ..	SOUTHAMPTON ..	11TH AUGUST, 1956

LANCASHIRE COUNTY COUNCIL. Applications are invited from registered medical practitioners for appointment of an ASSISTANT DIVISIONAL MEDICAL OFFICER in the Furness area of the County. Possession of Diploma in Public Health desirable. Salary £1050, rising to £1475 p.a. Travelling and subsistence allowances.

Application forms and further particulars from County Medical Officer, Serial 684, East Cliff County Offices, Preston.

GOVERNMENT OF SINGAPORE. Anæsthetist required to administer anæsthetics in Government hospitals and to instruct Junior Medical Officers, Intern House Physicians and Medical Students in the technique and practice of anæsthetics. Candidates must possess medical qualifications registrable in the United Kingdom and the F.F.A.R.C.S. and at least 6 years post-registration experience, including 3 in anæsthetics. Appointment on contract for 3 years resident service. Basic salary scale £1540–£1988 a year plus expatriation pay of £350 a year and temporary variable allowance of £210 a year for single officers, £392 a year for married officers without dependent children and £539-£560 a year for officers with dependent children. A gratuity (taxable) is payable after satisfactory completion of contract of from £300 to £450 a year depending on salary. European children do well up to the age of about 6 in Singapore and schools are available locally. Income-tax at local rates. Government quarters with heavy furniture at low rental, or allowance in lieu. Free passages for Officer, wife, and children under the age of 10 (not exceeding 4 persons besides himself). Generous leave.

Application forms from the Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD. 117/25/02).

GOLD COAST LOCAL CIVIL SERVICE. Gold Coast MEDICAL SERVICE. Applications are invited from doctors for the following posts in the Gold Coast Local Civil Service:—

(1) MEDICAL OFFICERS for general duties including hospital and district work.

(2) MEDICAL OFFICERS OF HEALTH. Diploma of Public Health or a similar recognised qualification required.

Appointment may be as follows:—

(*a*) Contract for 2 tours of duty of 18–24 months with gratuity (taxable) at the rate of £12 10s. for each completed month of service.

(*b*) On 3 years probation for permanent and pensionable employment. Pension (non-contributory) is earned at the rate of 1/600th of the final pensionable emoluments for each completed month of service.

(*c*) Doctors in the National Health Service may leave the National Health Service but retain their superannuation rights while in the Gold Coast (up to 6 years) and receive a gratuity (taxable) of 20% of their Gold Coast salary.

Salaries for officers appointed under (*a*) range from £1330 to £2310 a year and under (*b*) and (*c*) £1055 to £1850 a year, starting point being determined by qualifications and experience.

Quarters at rental not exceeding £150 a year. Income-tax at local rates. Free passages for Officer, wife, and up to 3 children under 13 years of age. Annual local leave is permissible and generous home leave is granted after each tour.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD. 117/13/04).

GOLD COAST LOCAL CIVIL SERVICE. Ministry of HEALTH. SPECIALIST OPHTHALMOLOGIST required to operate an Ophthalmological Unit in a major hospital and to study diseases of the eye in the field as and when required. Candidates must be registered medical practitioners holding either a Fellowship of 1 of the Royal Colleges of Surgeons or a Diploma in Ophthalmology, and must have had not less than 4 years approved full-time hospital experience in eye diseases, preferably under the direction of a fully qualified Specialist, after hospital experience in house posts. Appointment would be to Gold Coast Civil Service on contract for 2 tours of duty of from 18 to 24 months each in the first instance with gratuity on satisfactory completion of service. Basic salary scale would be £2400–£2700 a year. Gratuity (taxable) payable at rate of £12 10s. for each completed month of service. Candidate in the National Health Service may leave the National Health Service but retain his superannuation rights (up to a maximum stay of 6 years). Salary in this case would be in the scale £1900–£2200 a year, and the gratuity 20% of the aggregate of salary. Starting point in both salary scales is determined according to qualifications and experience. Quarters at rental not exceeding £150; income-tax at local rates; free passages for Officer, wife, and up to 3 children under 13 years of age. Generous home leave.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting reference No. BCD.117/13/03).

NORWICH. CITY AND COUNTY OF NORWICH. Applications are invited for the whole-time appointment of MEDICAL OFFICER OF HEALTH AND PRINCIPAL SCHOOL MEDICAL OFFICER from medical practitioners possessing the appropriate qualifications and experience. The salary will be at the rate of £2230 p.a., rising by 4 annual increments of £55 and 1 of £50 to a maximum of £2500 p.a., and in addition a car allowance will be paid.

A copy of the conditions of appointment can be obtained from the Town Clerk, City Hall, Norwich, by whom applications should be received not later than 20th August, 1956.

STOKE-ON-TRENT. CITY OF STOKE-ON-TRENT EDUCATION COMMITTEE. Applications are invited for the post of DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER. Salary scale: £1415–£1830 p.a. Contributory superannuation. Candidates should have a Diploma in Public Health and considerable experience as a School Medical Officer. The appointment is terminable by 3 months notice on either side. The successful candidate will be required to pass a medical examination.

Application forms are obtainable from the undersigned, P.O. Box No. 23, Town Hall, Hanley, Stoke-on-Trent, to whom they should be returned by 14th August, 1956.

H. DIBDEN, Chief Education Officer.

THE ROYAL BOROUGH OF KENSINGTON: METROPOLITAN BOROUGH OF CHELSEA. Applications are invited for the post of DEPUTY MEDICAL OFFICER OF HEALTH of the Royal Borough of Kensington and the Metropolitan Borough of Chelsea. Applicants must be duly qualified medical practitioners and also hold the Diploma in Public Health. Salary within the scale £1698 6s. 8d. p.a. rising by 2 annual increments of £105 and 1 of £55 to a maximum of £1963 6s. 8d. p.a., plus a car allowance at the rate of £130 p.a. Terms and conditions of appointment may be obtained from the Town Clerk of Kensington. Canvassing will disqualify.

Applications must be submitted to the Town Clerk of Kensington not later than NOON on 31st August, 1956.

J. WARING SAINSBURY, Town Clerk.

Town Hall, Kensington, W.8.

JOHN C. KITCHIN, Town Clerk.

Town Hall, Chelsea, S.W.3.

Appointment: Too Late for Classification

WICKFORD (near), ESSEX. RUNWELL HOSPITAL. (1032 Beds.) SENIOR HOUSE OFFICER (Male or Female) required for 1 of the Consultant's Divisions and to assist in outpatient work. Excellent postgraduate facilities for D.P.M. Salary £745, residential charge £180.

Applications, with copies of testimonials, to the Secretary.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

BURNLEY, LANCASHIRE. Applications invited for VACANCY due to resignation, arising 1st October, 1956. Chiefly urban in "intermediate" area. List approximately 1850, including 400 county patients. Surgery premises with flat above, available for purchase. Apply on Form E.C.16A (obtainable from address below) not later than 3rd August, 1956 to T. A. WATSON, Clerk of Burnley Executive Council.

92, Manchester-road, Burnley.

CASTLEFORD, YORKSHIRE. Applications are invited for medical practice VACANCY in the Castleford Municipal Borough. List at present 439. (Designated area.) Initial Practice Allowance payable subject to conditions of payment being satisfied. Residence and surgery available for purchase. Apply on Form E.C.16A to the undersigned, from whom further particulars may be obtained, not later than 31st July, 1956.

C. H. STABLER, Clerk of the West Riding Executive Council.

5, St. John's-north, Wakefield.

ISLE OF MAN HEALTH SERVICES BOARD. Applications are invited from medical practitioners wishing to undertake General Medical Services in Laxey and district in the Isle of Man. List at present 1850 registered patients. House and surgery available for purchase. Application forms to be returned not later than 11th August, 1956, and any further information obtainable from the Clerk, Medical and Dental Services Committee, 3, Harris-terrace, Douglas, Isle of Man.

Medical Practices available in South Australia.

No. B23. Suburban. Owing to ill-health partner wishes to retire from excellent 2-man partnership. Gross cash takings last financial year exceeded £28,000. 60% share available for £5000. Large modern home of 10 rooms available at valuation. Both house and practice can be purchased for low deposit.

No. B24. Country seaport. Partner required to replace man moving to city. Cash takings over £11,000. 40% share for sale at £3600. 8-roomed house for sale or rental. Liberal terms of purchase. Well-equipped 130-bed hospital.

No. B27. South East. Surgeon required to join 4-man general practice. Incomer expected to do some general practice. Government-subsidised 70-bed hospital in town. Practice is unopposed.

No. B29. North. 1-man country practice, takings over £3800, for sale at £2500. 7-roomed house plus surgery and waiting-room for sale at £1800. Practice, house and contents may be purchased for £10 per week—no deposit.

No. B30. North. Flourishing 1-man country practice over 200 miles from Adelaide, available for £2500; deposit £1000. Cash takings exceed £9500. Well-equipped 18-bed hospital provides all necessary instruments and equipment. House of 5 rooms, owned by Hospital Board, available at £2 10s. per week.

No. B31. Suburban. Partner required for rapidly growing suburban general practice. Incomer must be capable of doing general practice surgery. Cash takings £7000; 40% share for £2500 on liberal terms. Rented house available.

No. B33. Country seaside. 1-man country practice, takings over £4500, available for £2000. 6-roomed house in good condition for £2750. £750 deposit, balance over 4 years. Well-appointed 14-Bed hospital provides all necessary equipment. Unopposed.

No. B34. Suburban. General Practitioner required to replace man in 3-man partnership. Cash takings last financial year over £22,000. Senior partner is surgeon. 31% share for sale at £5000. Low deposit. Beautiful 7-roomed house with large garden available at £11,000.

No. B37. Partner required for busy suburban 2-man partnership. Takings over £19,000. Prospective purchaser required to serve 6 months as an assistant.

The above list is representative of the many opportunities we have to offer.

VICTORIA

No. V65. Unopposed country coastal practice available for £2500. Monthly takings average £475. This rapidly growing tourist resort has excellent 12-Bed hospital supplying all instruments, &c. House available for rental at £2 5s. per week.

ASSISTANTSHIPS—LOCUM TENENS, &c.

For full particulars, in confidence, write to—

BROWN & PEARCE LTD., Medical Agents.

227, North-terrace, Adelaide, South Australia

(Phone: W2646).

Miscellaneous

Medical Department Executive. Prominent Pharmaceutical House invite applications for the position of Medical Department Executive. Duties include the training and supervision of medical propaganda staff, compiling and editing of medical literature, and the initiation of clinical trials. Medical qualifications an advantage but not essential if applicant has appropriate background. Applications, which will be treated in the strictest confidence, should give full details of qualifications, experience, and indication of emoluments expected.—Address, No. 234, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Officer required by Falkland Islands Dependencies Air Survey for tour of 6 months service in Antarctic base. To leave U.K. in September, 1956. Salary £625 a year. Free passages, quarters, messing and canteen stores. Liberal leave on full salary. Candidates must possess qualifications registrable in the U.K.—Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3/43443/BG.

Cameroons Development Corporation require for service in the British Cameroons under the United Kingdom Trusteeship, a Medical Officer. Candidates should have a good experience of general medical and health work, and preference will be given to those who either possess a Diploma in Tropical Medicine, or who have had tropical experience. The work generally consists of general medical and health supervision of all personnel in large plantations, but offers opportunity for surgery. Commencing salary £1525, rising by annual increments of £50. First-class passages are provided for Officers and their wives, together with free quarters and heavy furniture during residence in the Cameroons. A reasonable amount of free lighting and fuel is also provided, and necessary transport. An outfit allowance of £80 is payable on first appointment. Children's allowances at the rate of £75 each are payable up to a maximum of 2. Officers are required to contribute 10% of their salary to a Provident Fund to which the Corporation contributes a further 15%. Tours of about 18 months, with 1 weeks leave for each month of service if the Officer is returning for further duty, otherwise half this amount of leave.

Applications, giving particulars in writing, to RUBBER & MINING AGENCIES LTD., 52, Leadenhall-street, London, E.C.3.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, July 21, 1956.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

Speedy recovery

In times of emergency, *the prompter the measures* the more successful the results. In all parts of the world, doctors express their preference for ACHROMYCIN tetracycline for the speedy control it exerts over serious infections. Its ready diffusion into body tissues and its dramatic striking power against invading organisms offer unsurpassed scope in antibiotic therapy to the doctor, and to the patient the promise of speedy, uneventful recovery.

ACHROMYCIN* TETRACYCLINE

*REGD. TRADE-MARK

ACHROMYCIN antibiotic

CAPSULES AND TABLETS

combat the infection... hasten the recovery

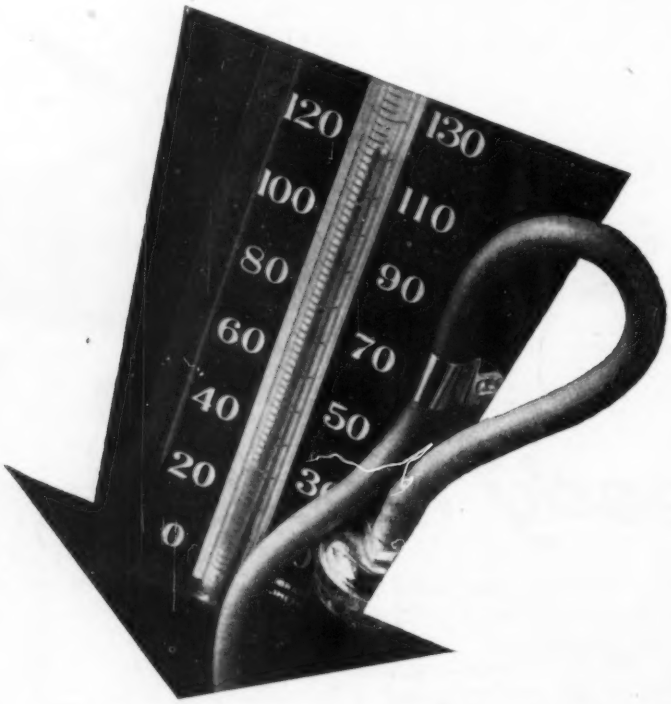
Achromycin is also available as :
EAR SOLUTION · INTRAMUSCULAR · INTRAVENOUS · OINTMENT
OPHTHALMIC OINTMENT · OPHTHALMIC POWDER STERILIZED
ORAL SUSPENSION · PEDIATRIC DROPS · SOLUBLE TABLETS
SPERSOIDS* Dispersible Powder · SYRUP · TROCHES

50 Lederle FIFTIETH ANNIVERSARY

LEDERLE LABORATORIES DIVISION

Cyanamid PRODUCTS LTD. LONDON, W.C.2

MA 3171



Further progress in the treatment of hypertension

The autonomic ganglion blocking agent, pentolinium tartrate is now widely acknowledged as being the most satisfactory single substance available for the reduction of raised arterial pressure. It is effective when given orally, has a powerful and prolonged hypotensive action, and when used with care in selected cases not only permits a resumption of more normal activities but frequently arrests or even reverses the organic changes resulting from sustained hypertension. Recently it has been shown that considerable advantage is to be gained by using 'Ansolysen' in conjunction with the hypotensive and sedative alkaloid, reserpine. This combined therapy not only minimizes some of the effects of parasympathetic blockade associated with the unselective ganglion blocking action of 'Ansolysen', but also permits a reduction in the effective dose of this drug. *Detailed information is available on request.*

'ANSOLYSEN'

trade mark *brand*

PENTOLINIUM TARTRATE

PRESENTATIONS

'ANSOLYSEN' Tablets of 10, 40 and 200 mgm; 0·5 per cent and 2·5 per cent solutions for injection; 1 per cent and 2·5 per cent solutions for injection (with 0·5 per cent ephedrine hydrochloride) ★

RESERPINE Tablets of 0·25 mgm and 0·5 mgm.

An **M&B** *brand medical product*

★*The Retard Solutions of 'Ansolysen' and of 'Vegolysen' brand hexamethonium bromide have now been discontinued, and replaced by solutions containing similar quantities of hypotensive agents, together with 0·5 per cent. ephedrine hydrochloride to delay absorption from the site of injection.*

Care may be necessary in using these new presentations in patients in whom the Retard Solutions have hitherto been employed, as the full hypotensive effect may be slightly more rapid in onset.

MANUFACTURED BY

MAY & BAKER LTD

DISTRIBUTORS PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD · DAGENHAM · ESSEX